SPHERA EVO 2.0 EASYHybrid

SQKN-YEE 1 BH+MiSAN-YEE 1 S 2.1-8.1

MANUAL

Change living home

M0GQ00002-03 05/2023

Keep this manual with the wiring diagram in an accessible place for the operator, for future reference.

Dear Customer,

We congratulate you on choosing these product

Clivet has been working for years to offer systems able to assure the maximum comfort for a long time with highly-reliable, efficient, high-quality and safe solutions.
The target of the company is to offer advanced systems, that assure the best comfort and reduce energy consumption as well as the installation and maintenance costs for the entire life-cycle of the system.

With this manual, we want to give you information that are useful for all phases: from reception, installation and use to disposal - so that such an advanced system can provide the best performances during installation and use.

Best regards and have a good read.

CLIVET Spa

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Pay particular attention to:

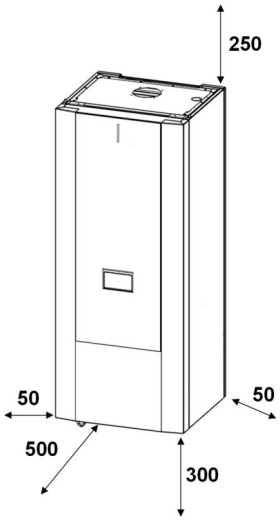
INSTALLER use

USER use

Component supplied with the unit:
Use and maintenance manual
Torx key
Torx insert
Water connections
1" mesh filter (0.5mm stainless steel mesh)
1/2" EPDM gasket
3/4" EPDM gasket
Refrigeration connections
3/8"-->10mm gas fittings
5/8"-->16mm gas fittings
10mm-->6mm gas fittings
3/8" copper gasket
5/8" copper gasket
Boiler
Use and maintenance manual
DN25 condensate drainpipe with fitting
Fixing bracket

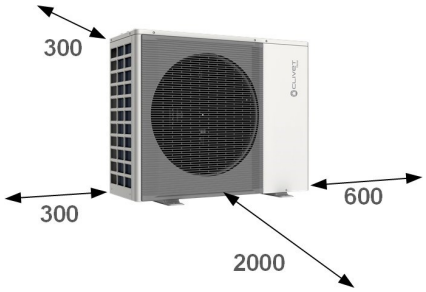
STD UNIT INSTALLATION

Indoor unit

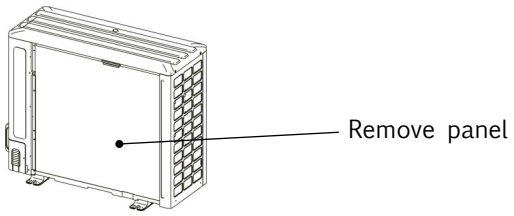


Size	A	B
Hydronic + structure - kg	39	41
24kW boiler - kg	27	-
34kW boiler - kg	42	42
Width	410	
Length	450	
Height	1130	
Operating weight - kg	70/73	75

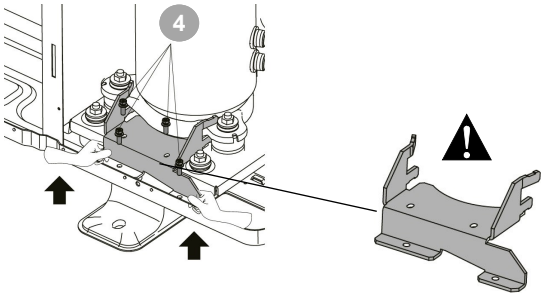
Outdoor unit



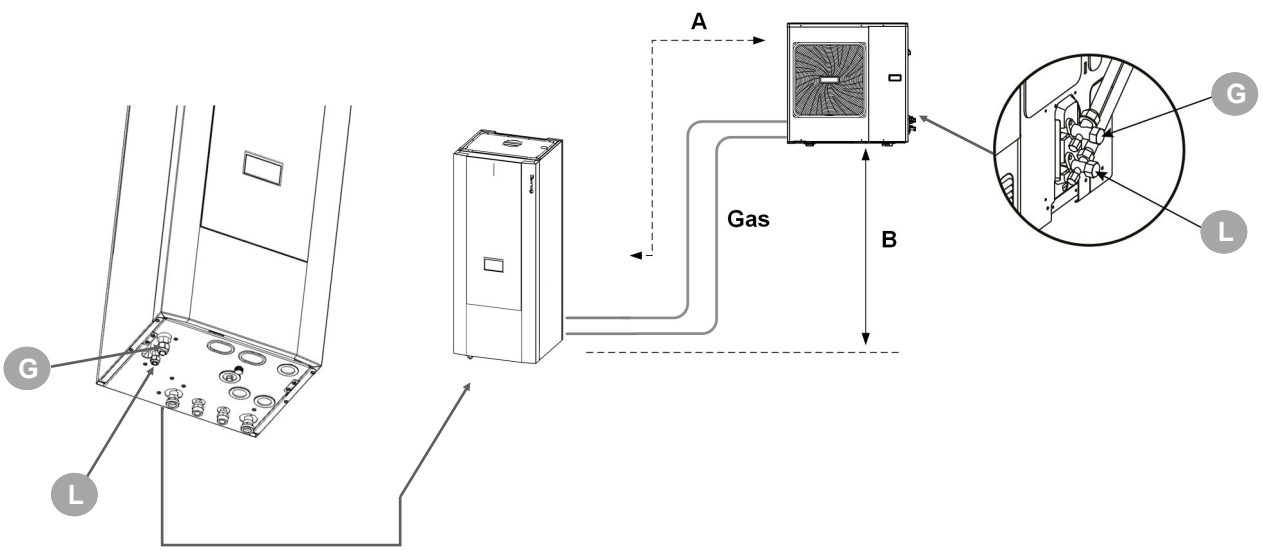
Size	2.1-3.1	4.1-5.1	6.1-8.1	6.1-8.1
Width	426	523		
Length	986	1104		
Height	712	886		
kg	58	77	96	112
Power supply	1-phase			3-phase



Remove the compressor fixing bracket (size 6.1-8.1)



REFRIGERATOR CONNECTIONS

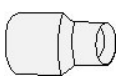


Use the components supplied with the unit or perform flaring to make the connections.

Maximum distances			2.1 - 8.1
Refrigerant pipe min/max equivalent length	A	m	2 - 30
Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit	B	m	25
Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.	B	m	25

Type of pipes		2.1 – 3.1	4.1 – 8.1
Liquid Ø external	L	1/4" (6,3mm) *	3/8" (9,5mm)
Gas Ø external	G	5/8" (15,9mm)	5/8" (15,9mm)
Min. thickness gas		0,8 mm	
Min. thickness liquid		0,8 mm	

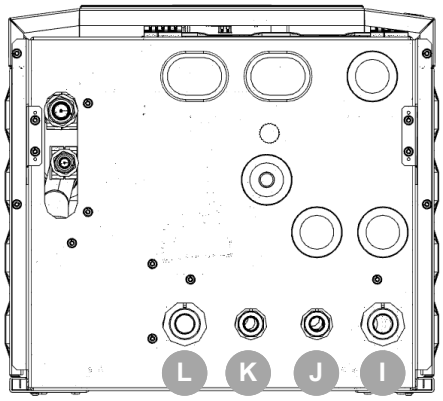
* Reduction 10-6 for outdoor unit size 2.1-3.1



Additional refrigerant charge		2.1 – 3.1	4.1 – 8.1
Further refill for distance exceeding 15 metres (kg/m)		0,02	0,038

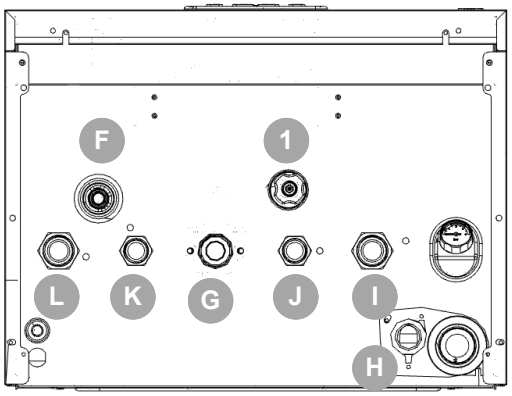
Water connections

Unit



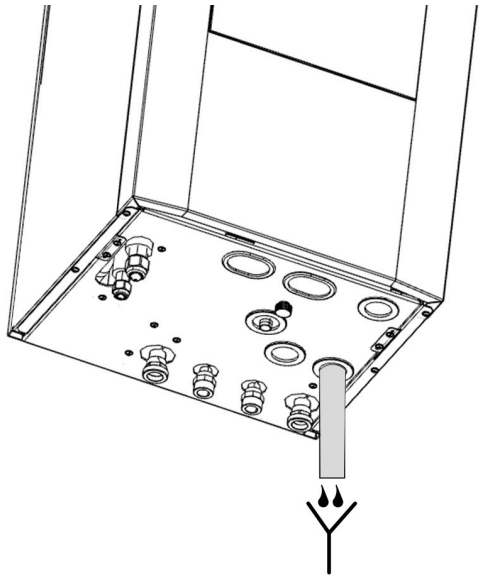
N°	Description	Ø
L	System return	1”
K	DHW boiler output	3/4”
J	Aqueduct inlet	3/4”
I	System outlet	1”

Boiler

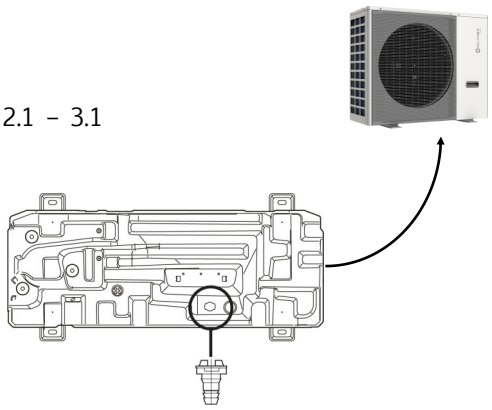


G	Gas connection	3/4”
H	Boiler condensate drain	
F	Safety valve drain	15mm
1	System filling schut valve	

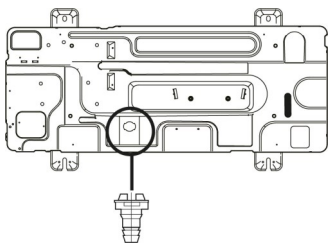
Condensate drain



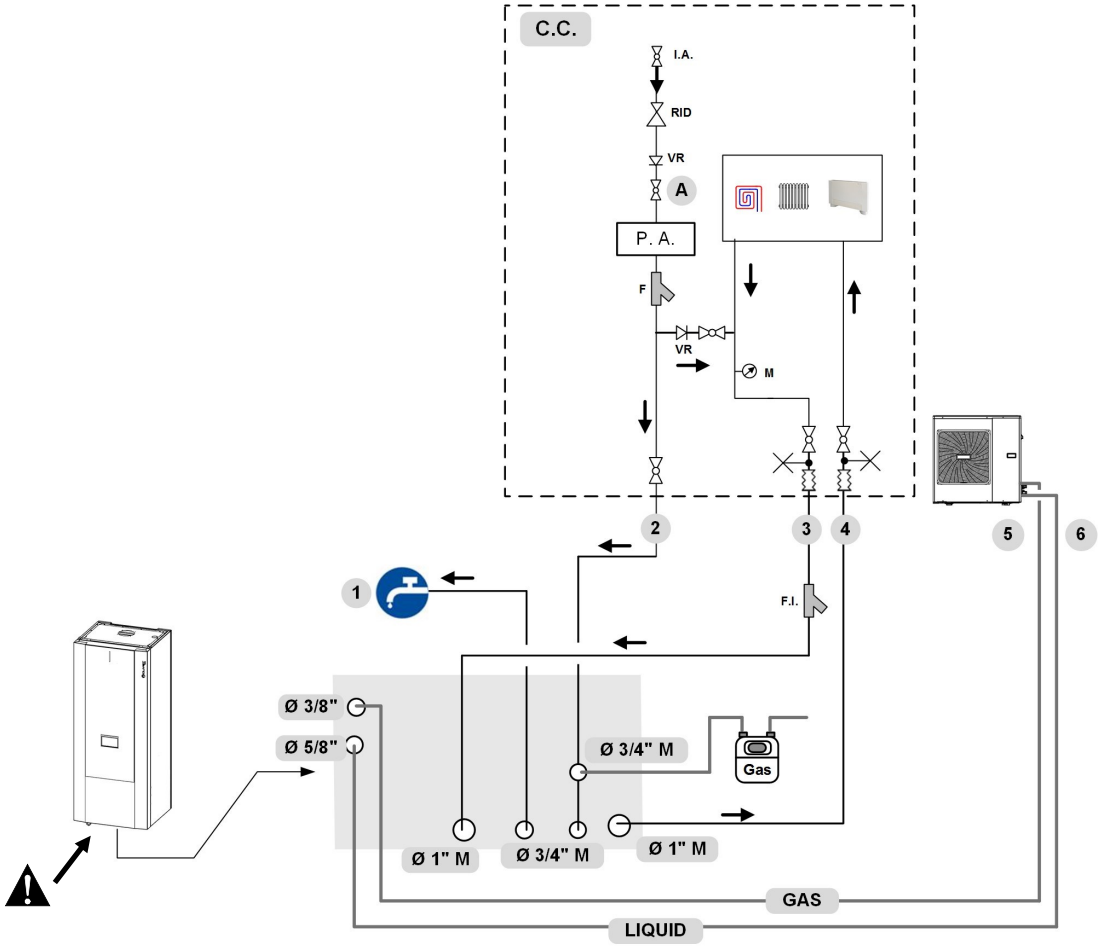
Size 2.1 – 3.1



Size 5.1 – 8.1



HYDRAULIC CONNECTION SCHEMA



⚠ Isolate the pipes to avoid heat dispersions and formation of condensate.

Indicative plumbing diagram

The system components must be defined by Designer and Installer (ex. expansion tanks, vents, taps, calibration/safety valves etc.)

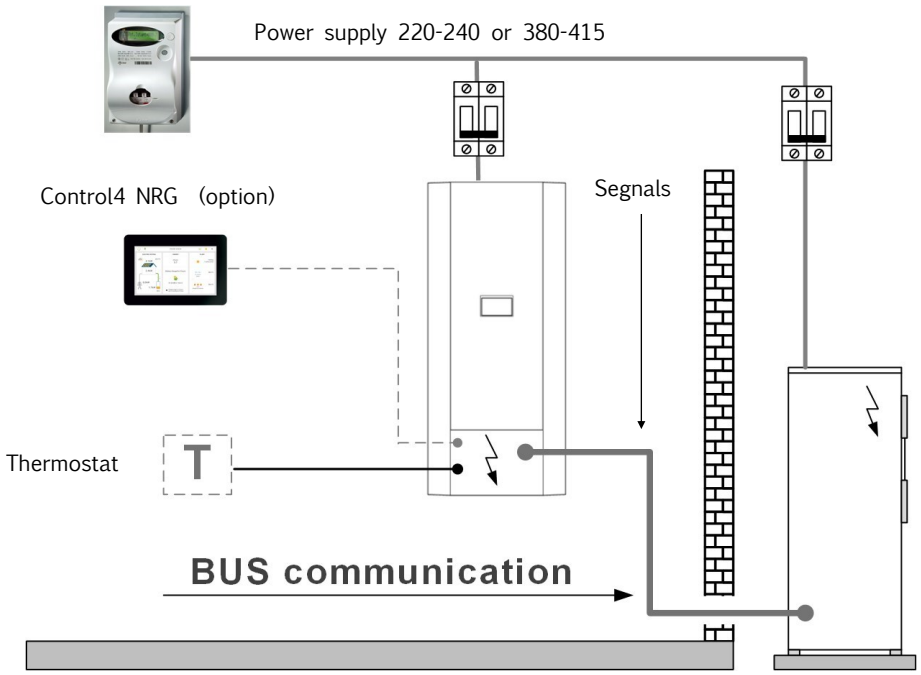
C.C	Components provided by Customer
A	System valve
I.A.	Aqueduct inlet
F	Water filter (provided by the customer)
F.I.	System filter
M	Pressure gauge
P.A.	Descaler protection
RID	Pressure reducing valve
VR	Check valve

1	DHW outlet
2	Aqueduct inlet
3	System water return
4	System water outlet
5	Refrigerant line (liquid)
6	Refrigerant line (gas)
	Vent
	Cut-off valves
	Anti-vibration joints

In the tightening operations always use the wrench and backup wrench.

ELECTRICAL CONNECTIONS

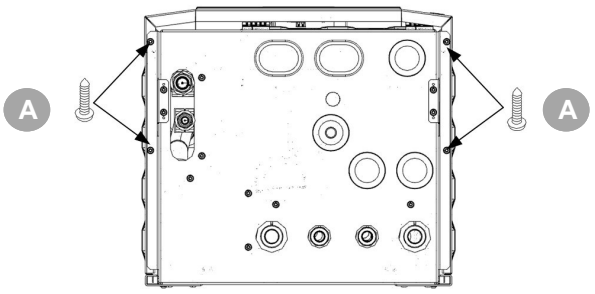
⇒ *Separate power supply and signal*

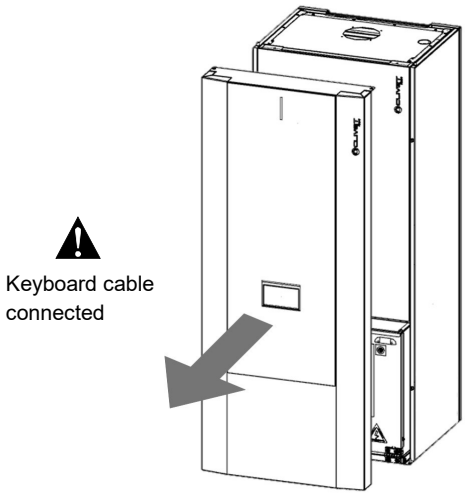


Access to the internal parts

1 Remove the screws (A)

2 Remove the panel

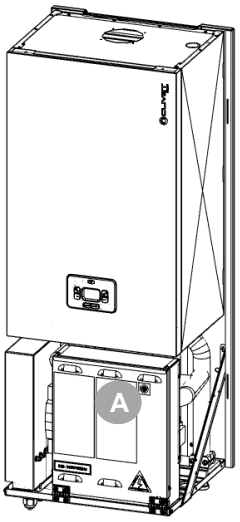




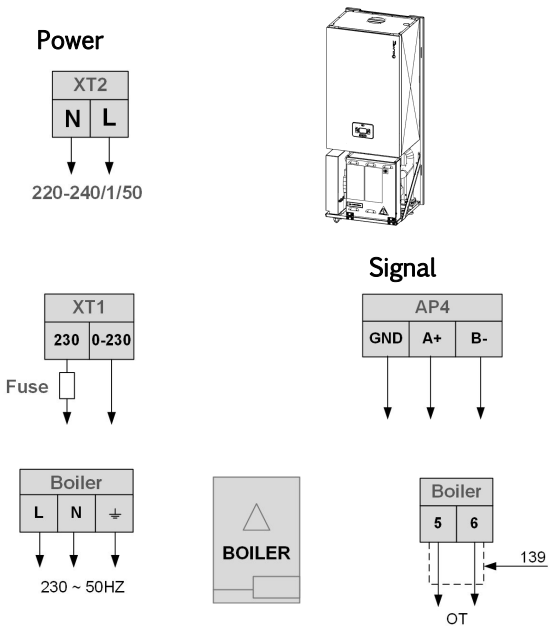
Internal unit connections

Carry out the connection in accordance with the electric connection layout.
Wiring size (mm^2) = 1,5

A = Wiring diagram

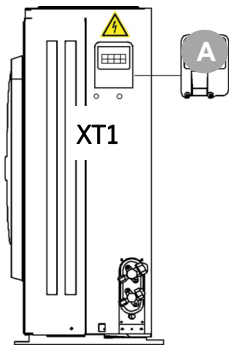


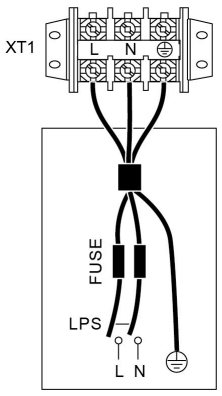
1-phase supply



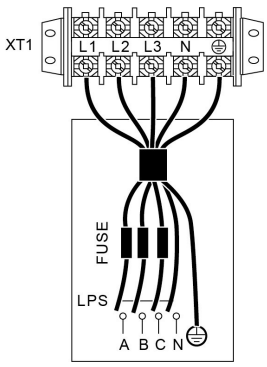
External unit connections

Remove the protective cover (A)





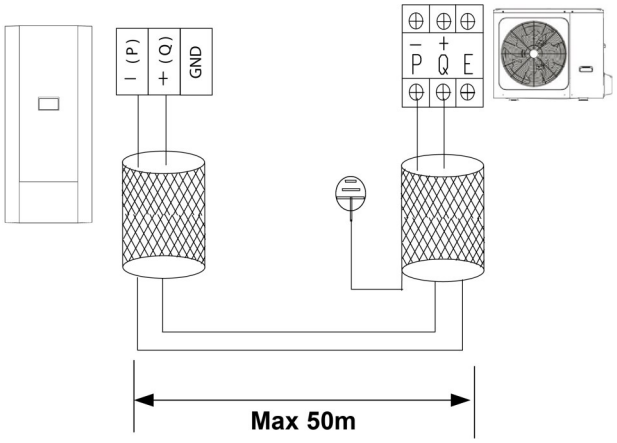
1-phase supply



3-phase supply

Unit (size)	1-phase			3-phase
	2.1-3.1	4.1-5.1	6.1-8.1	6.1-8.1
Maximum overcurrent protector (MOP)	18	19	30	14
Wiring size (mm^2)	4	4	6	2,5

Bus connections



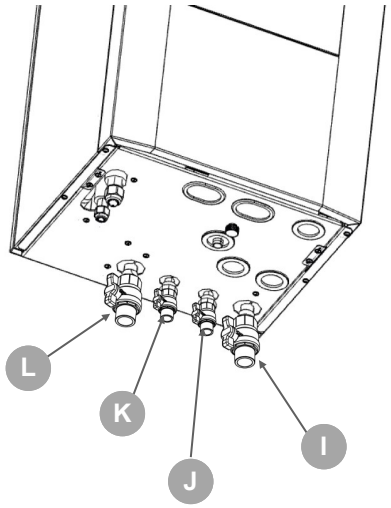
Cable type	2-core shielded wire 0,75 - 1,25 mm^2 (AWG18-AWG16)

START-UP

System charge heating/cooling

1 Switch OFF the unit
2 Start filling; open the filling tap located on the system
3 Open taps (L-I)
4 Open the vent valves of the terminals or radiators
5 Close them when water begins to exit; continue the charging until the pressure intended for the system (max.3 bar).
6 Check the hydraulic seal of the joints.

- Repeat the operation after the unit has operated for a number of hours and periodically control the system pressure. Reintegration is carried out when the unit is off (pump OFF).

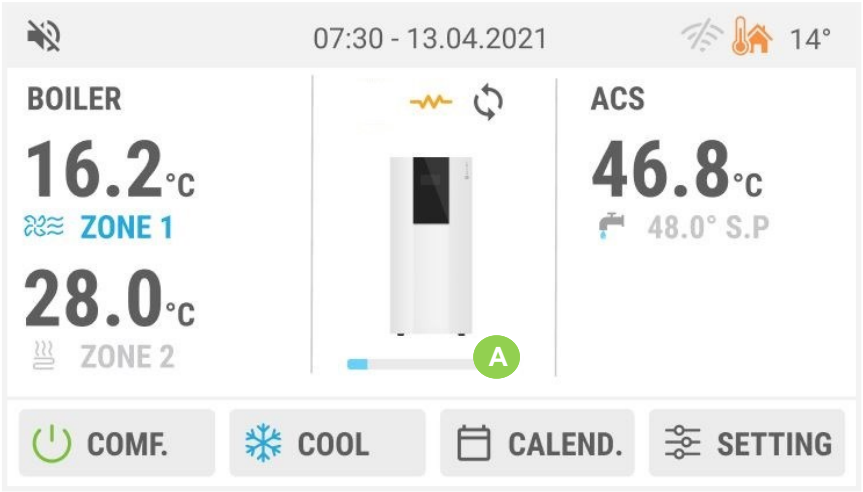


L	System return
K	Aqueduct inlet
J	Uscita ACS
I	System outlet
	Taps (provided by the customer)

	√	**Preliminary checks**
1	☐	Are the functional spaces of the internal unit and the external unit being observed ?
2	☐	Is the section of the cooling lines correct ? Have the supplied sealing couplings been used ?
3	☐	Does the equivalent length of the refrigerant piping exceed 3m or ≤30m?
4	☐	Is the height different of the refrigerant piping below 25m?
5	☐	Have emptying and additional load been carried out ? Was there a visual check for oil / leaks ?
6	☐	Water features are suitable? The hydraulic system has been cleaned?
7	☐	Is the water filter from the waterworks inlet correctly installed ?
8	☐	Is the system filter on the supply correctly installed?
9	☐	Are the inlet and outlet of the water lines correct ?
10	☐	Is there a non-return valve on the DHW recirculation line?
11	☐	Present safety valve on the DHW side?
12	☐	Present expansion vessel on the DHW side?
13	☐	Has the compressor support bracket been removed?
14	☐	Does the system contain the minimum required amount of water?
15	☐	Are the anti-vibration joints on the hydraulic connections present ?
16	☐	Was the system loaded, placed under pressure and was the air let out ?
17	☐	Have you verified the expansion tank charge ?
18	☐	Was the condensate produced by the external unit drained correctly ? Can it freeze ?
19	☐	Have the electrical connections to the external unit been made ?
20	☐	Earthing connection? Is the power supply correct ? Is the available power supply sufficient ?
21	☐	Are the system temperature and the room temperature with the operating limits ?
22	☐	Is the screed “dry” ? (only in presence of radiant panels)
23	☐	Has the carter resistance been charged for at least 8 hours ?
24	☐	Select keyboard language
25	☐	Set date and time
26	☐	Sanitary water and system personalisation
27	☐	Compile documentation

SETTINGS

MULTIFUNCTION KEYPAD - TOUCH SCREEN



Display

	Active Silent mode		System status		DHW
	Active SuperSilent mode		Cooling		Anti-legionella
	Fan coil		Heating		Active alarm
	Radiant panels		Scheduling		Alarm on progress
	Radiators		Setting	**16.2°C**	Zone 1 temperature
	Defrosting		DHW recirculation	**28.0°C**	Zone 2 temperature
	DHW + HP (heat pump)		Solar apnel (if present)	**46.8C**	Actual DHW temperature
	DHW + Boiler		Outside air temperature	**48.0°C**	DHW setpoint
	DHW + Resistance		Wi-fi	**A**	Display unit in operation
	DHW + solar (if present)		Electric heater		

Menu structure

Press 5s

Heat pump

Boiler only (heat pump excluded)

Normal operation (operation dependent on circuit demand)

Settings

Climatic Zone 1 (fixed / compensated)

Climatic Zone 2 (fixed / compensated)

Press

System status

Off

Economy

Comfort

Programmed

DHW only

Press

System mode

Cooling

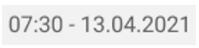
Heating

Automatic

Press

Zone Setpoint

Zone 1 / Zone 2 setpoint temperature



Press 5s

Date and hour

Year / month / day / hour / minute

Press

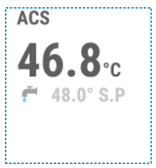
Calendar

Unit scheduling

Dhw scheduling

Timed forcing

Anti-legionella



Press 5s

DHW

Normal operation (operation dependent on DHW demand)

Only solar thermal (the DHW storage tank is heated only by the solar panels)

Boilr only (the heat pump is excluded)

Reload now (Boost) Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint)

Exclude

Settings

Anti-legionella set

Recirculation enable

Charging mode

Press 5s

Stata I/O
DI01
DI02
DI03
Ecc....

Press

Operation status
Set point
T. external
T. return
T. supply
Ecc..

Press

Setting *
Parameter
Keyboard
- language
- Brightness
- Upload language files (**)

Info system
- HMI
- IDU Mainboard
- ODU Mainboard
- Double Zone Mainboard (only if enabled secondary)

Alarms (if active alarms are present)
Alarms log
Installer functions
WiFi configuration
Cloud configuration
Export parameters (**)
Update parameters (**)
Update firmware (**)

(*) Visible only after having entered the password
(**) Only with USB connected

LIST OF ACCESSORIES SEPARATELY SUPPLIED

Indoor unit	
KIRE2HX/KIR2HX	2 zones: external kit, both at high temperature
KIRE2HXL/KIR2HXL	2 zones: external kit, high temperature + low temperature (mixed)
KCSX/KCSIX	Kit for secondary circuit (1L hydraulic separator + pump)
DIX	1L hydraulic separator
ACI40X	40-liter inertial storage tank
ACS200X	200-litre domestic hot water storage tank
ACS300X	300-litre domestic hot water storage tank
ACS500X	500-litre domestic hot water storage tank
SCS08X	0.8 m^2 solar exchanger for flange installation
SCS12X	1.2 m^2 solar exchanger for flange installation
VDACSX	Thermostatic diverter valve for domestic hot water
3DHWX	3-way valve for domestic hot water
KCVEX	Circulation kit: circulation group, control unit, expansion tank

Tower version	
TUNOX	Main aesthetic heat pump cabinet
TDUEX	Additional aesthetic cabinet with 150L DHW storage tank
TDUESX	Additional aesthetic cabinet with 150L DHW storage tank with a 1m^2 solar exchanger
TTREAX	Second additional aesthetic cabinet with 150L DHW storage tank
TTREX	Additional aesthetic cabinet for system accessories
AC50X	50 litre system inertial storage tank for indoor installation
KPRSX	DHW recirculation pump kit

System	
HID-TCXB	WHITE chronothermostat with soft touch display, temperature control and management via App / Voice control, for semi-uncased installation
HID-TCXN	BLACK chronothermostat with soft touch display, temperature control and management via App / Voice control, for semi-uncased installation
SWCX	SwitchConnect radio receiver

Outdoor unit	
DTX	Auxiliary condensate collection tray
APAVX	Kit of antivibration mounts for floor installation
ASTFX	Kit of antivibration mounts for wall bracket installation
KSIPX	Wall fixing bracket kit

Boiler	
KSDFX	Suction and exhaust fittings 80mm diameter
KCSAFX	Vertical coaxial connection Ø 60/100
CCOAX	Horizontal coaxial curve Ø 60/100 adjustable at 360 °
TCOAX	Coaxial pipe L = 1000mm Ø 60/100 with terminal

N.B.: the name and availability of accessories that are supplied separately may vary over time, please refer to our website for the most up-to-date version.

SAFTEY

Operate in compliance with safety regulations in force .

Use single protection devices:

gloves, glasses, helmet, etc..

The precautions in this manual are divided as indicated on the side.

They are important, so make sure you follow them closely.

Please read these instructions carefully before installing.

Keep this manual handy for future reference.

This unit contains fluorinated gases. For specific information on gas types and quantities, please refer to the plate found on the unit.

Please contact your dealer for future assistance.

DANGER

⇒ *An incorrect installation of equipment or accessories may provoke electric shocks, short circuits, leaks, fire or other damages to the equipment. Make sure you only use accessories provided by the supplier - which are designed specifically for the equipment - and make sure they are installed by a professional.*

⇒ *All activities described in this manual must be performed by authorised technicians. Make sure to wear suitable personal protection such as gloves and safety goggles while installing the unit or performing maintenance operations.*

⇒ *Switch off the power switch before touching electrical components and terminals.*

⇒ *When the service panels are removed, the live parts can easily be touched by mistake.*

⇒ *Never leave the unit unattended during installation or maintenance operations while the service panel is removed.*

Meaning of the symbols DANGER, WARNING, CAUTION and NOTE

DANGER

⇒ *It indicates a situation of imminent danger that, if not avoided, will cause death or serious lesions.*

WARNING

⇒ *It indicates a potentially dangerous situation that, if not avoided, may cause death or serious lesions.*

CAUTION

⇒ *It indicates a potentially dangerous situation that, if not avoided, may cause slight or moderate injury. Also used to warn against unsafe practices.*

NOTE

⇒ *It indicates situation that may cause accidental damage to the equipment or property.*

⇒ *Do not touch the water pipes during and after performing welding or junction work as the pipes may be very hot and you may burn your hands. To avoid lesions, wait until the pipes return to a normal temperature or make sure you are wearing protective gloves.*

⇒ *Do not touch any switch with wet hands. Touching a switch with wet hands may lead to electric shock.*

WARNING

⇒ *The power supply of the series complies with IEC / EN 61000-3-11 and must be connected to a suitable power supply network, in able to support a maximum system impedance of Zmax = 0.351 ohm on the interface. Keep in touch with the supply authority so to ensure that the power supply is connected only to a power supply with an impedance no more than the one shown above.*

⇒ *Maintenance operations must be performed as recommended by the manufacturer. Maintenance and reparation operations requiring the assistance from specialized personnel must be performed under the supervision of the person competent as regards flammable refrigerants.*

⇒ *Tear and dispose of plastic bags so that children may not play with them. Children playing with plastic bags risk choking.*

⇒ *Some products use PP packaging straps. Do not pull the straps or use them to lift or move the product. It may be dangerous should the straps break.*

⇒ *Dispose safely of packaging material such as nails or other metal or wooden parts that may cause lesions.*

⇒ *Ask your dealer or qualified personnel to perform installation operations according to this manual. Do not install the unit yourself. An incorrect installation may cause water leaks, electric shock or fire.*

Warning:
Fire hazard
Flammable materials

⇒ *Make sure to only use accessories and parts specified for installation operations. Failing to use specific parts may cause*
⇒ *water leaks, electric shock, fire or the unit falling from its support.*
⇒ *Install the unit on a structure that can withstand its weight. An insufficiently robust structure may lead to the unit falling causing possible lesions.*
⇒ *Perform installation operations considering the possibility that strong winds, hurricanes or earthquakes may occur. Incorrect installation operations may lead to accidents caused by falling equipment.*
⇒ *Make sure all electrical operations are performed by qualified personnel in accordance with the law, local regulations and this manual.*
⇒ *Connect the unit to a separate power supply circuit. An insufficient capacity of the power supply circuit or incorrect connections may lead to electric shock or fire.*
⇒ *Make sure to install an additional differential circuit-breaker against a leakage to earth compliant with the law and local regulations.*
⇒ *The unit must be installed with an Creepage Breaker near the power supply and must be effectively earthed.*
⇒ *A creepage breaker must be installed adjacent to the power supply*
⇒ *Never use the wire and fuse with wrong rated current, otherwise unit may break down and cause fire furthermore.*
⇒ *Failing to install a differential circuit-breaker may lead to electric shock and fire.*
⇒ *Make sure all the wiring is safe. Use the specified wires and make sure terminal connections and wires are protected against the water, external forces or other phenomena. Incomplete connections or fixing may cause a fire.*

⇒ *When connecting the power supply, arrange the wires so that the front panel can be fixed properly. If the front panel is not in position, it may lead to terminals overheating, electric shock or fire.*

⇒ *People working or intervening on a cooling circuit must hold a suitable certification issued by an authorised assessment centre proving their suitability to handle refrigerants safely in compliance with a specific assessment recognised by industry associations.*

⇒ *After installation operations are over, verify that there are no refrigerant leaks.*

⇒ *Never touch the leaking refrigerant directly, as it may lead to serious frostbite injuries. Do not touch the refrigerant pipes during and right after functioning, as they may be hot or cold depending on the conditions of the refrigerant flowing through the pipes, compressor and other parts of the cooling circuit. Burns or frostbite may occur if you touch the refrigerant pipes. If it is necessary to touch the pipes, wait for them to return to a normal temperature or wear protective gloves and clothes.*

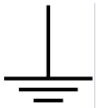
⇒ *Do not touch the internal parts (pump, backup heater, etc.) during and immediately after functioning. Touching internal parts may cause burns. To avoid lesions, wait until the internal parts have returned to a normal temperature or, if touching them is necessary, wear protective gloves.*

⇒ *Do not use other means than those recommended by the manufacturer to hasten the defrosting or cleaning process.*

⇒ *The equipment must be placed somewhere without continuous ignition sources (e.g. open flame, a gas-operated device or an electric heater).*

⇒ *Do not pierce nor burn.*

⇒ *Be aware that refrigerants are odourless.*



CAUTION

⇒ *Place the unit on the ground.*

⇒ *The earth resistance should comply with the law and local regulations.*

⇒ *Do not connect the earth cable to gas or water mains, lightning rods or phone earth cables.*

⇒ *Incomplete earthing may cause electrical shocks.*

- Gas mains: fires or explosions may occur in case of a gas leak.
- Water mains: rigid vinyl tubes are not effective.
- Lightning rods or phone earth cables: the electrical threshold can increase abnormally if hit by lightning.

⇒ *Install the power supply cable at least one metre from TVs or radios to prevent interferences or disturbances. Depending on the type of radio wave, one metre may not be enough to avoid disturbances.*

⇒ *Do not wash the unit as it may cause electric shocks or fires.*

⇒ *If the power supply cable is damaged, it must be replaced by the producers, personnel from its assistance network or qualified personnel.*

⇒ *Do not install the unit in the following places:*

- Where there is mineral oil, even in form of vapour. Plastic parts may deteriorate, disperse and cause water leaks.
- Where corrosive gases (such as sulphurous acid) are produced.
- Where the corrosion of copper pipes or welded parts may cause refrigerant leaks.
- Where there are devices emitting electromagnetic waves. Electromagnetic waves may disturb the control system and cause malfunctions.
- Where flammable gases may leak, or carbon fibre or flammable powers may be found in the air or where volatile flammable materials such as paint thinners or petrol are handled. These gases may cause a fire.

- Where the air contains high levels of salt, such as the seaside.
- Where the power supply voltage is subject to fluctuations, such as in factories.
- On vehicles or ships.
- Where there are acid or alkaline vapours.

⇒ *Prior to installation, verify if the user's power supply meets the unit's installation requirements (including reliable earthing, differential circuit-breaker, component size, wire section, etc.). If the electrical installation requirements are not met, the unit cannot be installed until the electrical system is rectified.*

⇒ *Before the hydraulic connection and electrical wiring operations, verify that the installation area is safe and without hidden dangers such as water, electricity and gas conduits.*

⇒ *Do not touch the fins of the heat exchanger as they may cause injury.*

⇒ *If installing multiple units in a centralised manner, adjust the electric load on the various phases. Do not connect multiple units to the same phase of the three-phase supply.*

⇒ *The following subjects may use the unit if supervised or instructed on safe usage and capable of understanding the possible dangers: children who are minimum 8 years old, people with no experience or knowledge, people with limited physical, sensory or mental abilities.*

⇒ *Children should be supervised to ensure that they do not play with the appliance.*

⇒ *Cleaning and maintenance operations to be carried out by the user must not be performed by unsupervised children.*

⇒ *Once the installation is complete, the unit tested and functioning is normal, instruct the client as regards the use and maintenance of the unit as indicated in this manual. In addition, make sure that the manual is suitably kept for future reference.*

⇒ *The installer must deliver the manual and wiring diagram to the User.*

⇒ *DISPOSAL: do not dispose of this product as unsorted waste. Contact the local authorities for information on the collection systems available. If electrical equipment is disposed of in landfills, dangerous substances may infiltrate the waste water and enter the food chain, harming the health and well-being of people and animals.*

This product contains fluorinated greenhouse gases covered by the Kyoto protocol. Do not discharge gas into air.

Refrigerant type: R32

Characteristics of R32 refrigerant:

- minimum environmental impact thanks to the low Global Warming Potential GWP
- low flammability, class A2L according to ISO 817
- low combustion speed
- low toxicity

The refrigerant quantity is indicated on the unit plate

Quantity factory-loaded refrigerant and equivalent CO_2 tons:

Size	Refrigerant (kg)	Equivalent CO_2 tons
2.1 - 3.1	1,50	1,02
4.1 - 5.1	1,65	1,11
6.1 - 8.1	1,84	1,24

Physical characteristics of the R32 refrigerant		
Safety class (ISO 817)	A2L	
GWP	675	
LFL Low flammability limit	0.307	kg/m3 @ 60°C
BV Burning velocity	6,7	cm/s
Boiling point	-52	°C
GWP	675	100 yr ITH
GWP	677	ARS 100 yr ITH
Self-ignition temperature	648	°C

UNIT INDENTIFICATION

Serial number label

The serial number label is positioned on the unit and allows to indentify all the unit features.

Warning

⇒ *It has not to be removed for any reason.*

It reports the regulations indications such as:

- machine type, exmple
- size
- serial number
  xxxxxxxxxxxx
- year of manufacture
- wiring diagram number
- electrical data
- manufacturer logo and address .

Serial number

It identifies uniquely each machine.

It identifies specific spare parts for the machine.

Assistance request

Note data from the serial number label and write them in the chart on side, so you will find them easily when needed.

In case of intervention you have to provide data.

Serie
Size
Serial number
Year of manufacture
Wiring diagram

Preliminary information

NOTE

Before beginning the work, ensure you that have the final project for installing the system and positioning the units.

Operate in compliance with safety regulations in force .

Use single protection devices.

Before accepting the delivery you have to check:

- that the unit hasn't been damaged during transport.
- Check that the materials delivered correspond with that indicated on the transport document comparing the data with the identification label '**A**' positioned on the packaging.

In case of damage or anomaly:

- Write down on the transport document the damage you found and quote this sentence: "Conditional acceptance clear evidence of deficiencies/damages during transport".
- Contact supplier and the carrier by fax and registered mail with advice of receipt.

NOTE

⇒ *Any disputes must be made within the 8 days following the delivery. Complaints after this period are invalid.*

Storage

Shelter from: direct sunlight, rain, sand and wind.

Stocking temperature:

maximum 50°C

minimum -10°C

NOTE

⇒ *The respect of the instructions on the exterior side of the packaging assures the physical and functional integrity of the unit for the final user's advantage.*

Handling

Before handling verify that the unit keeps its balance.

The following examples are indications the choice of the means and of the handling modes will depend on factors.

1 Verify unit weight and handling equipment lifting capacity .

2 Identify critical points during handling (disconnected routes, flights, steps, doors).

3 Stair climbing trolley.

4 Use protection (A) to avoid the unit damaging

5 Do not leave loose packages during the transport

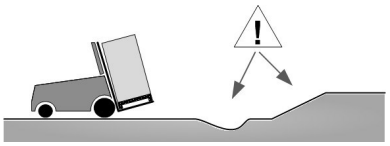
6 Do not move the units alone

DANGER

⇒ *It is strictly forbidden to stand under the machine when it is lifted.*

1

2



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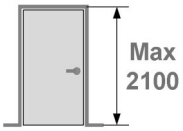

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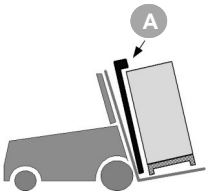

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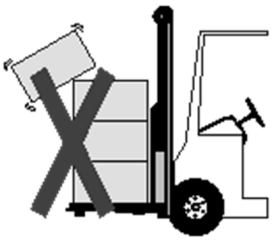


6

External unit

1 Fork input side

2 Input side for lifting by crane

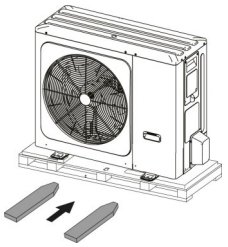
3 Do not lean it more than 45°, and do not lay it sidelong

4 Before starting the handling, make sure that the unit is stable.

DANGER

⇒ *It is strictly forbidden to stand under the machine when it is lifted.*

1



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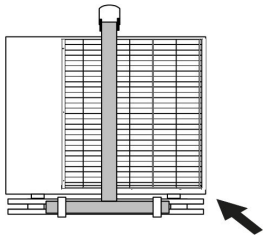

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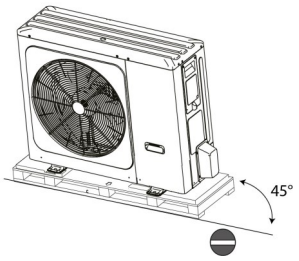

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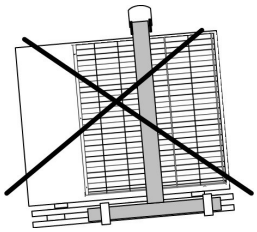


1 - Component supplied with the unit

Use and maintenance manual
Torx key
Torx insert

Water connections

1" mesh filter (0.5mm stainless steel mesh)
1/2" EPDM gasket
3/4" EPDM gasket

Refrigeration connections

3/8"-->10mm gas fittings
5/8"-->16mm gas fittings
10mm-->6mm gas fittings
3/8" copper gasket
5/8" copper gasket

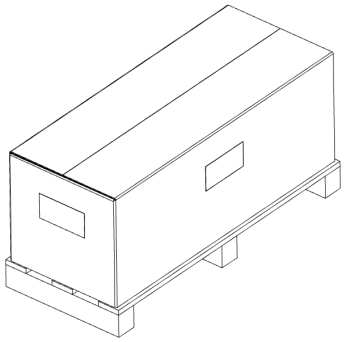
Boiler

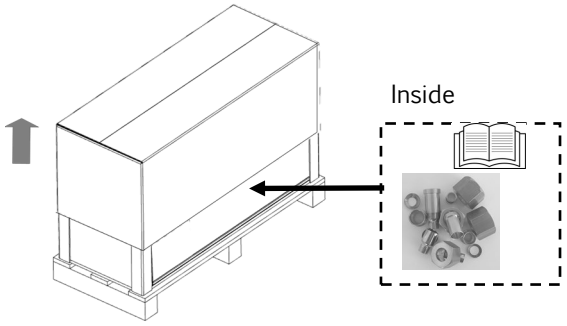
Use and maintenance manual
DN25 condensate drainpipe with fitting
Fixing bracket

2 - Remove wooden platforms

- Remove the screws (A)

1





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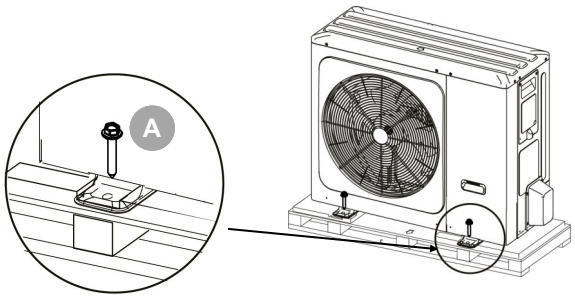
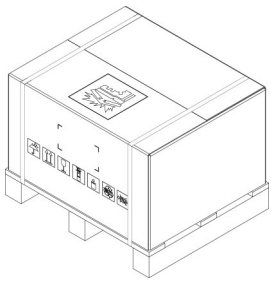


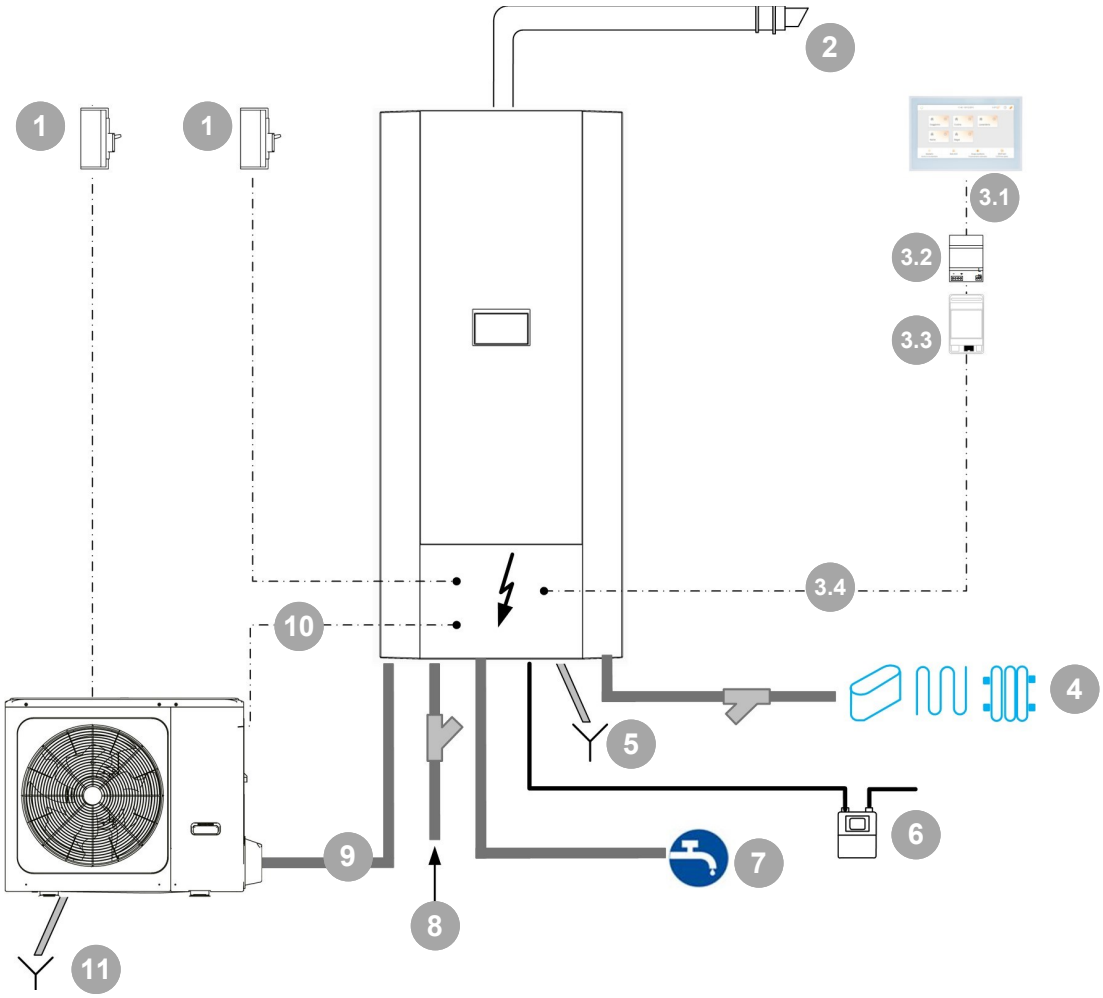
Boiler



Packing removing

Be careful not to damage the unit.
Keep packing material out of children's reach it may be dangerous.
Recycle and dispose of packing material in conformity with local regulations.

Connections scheme

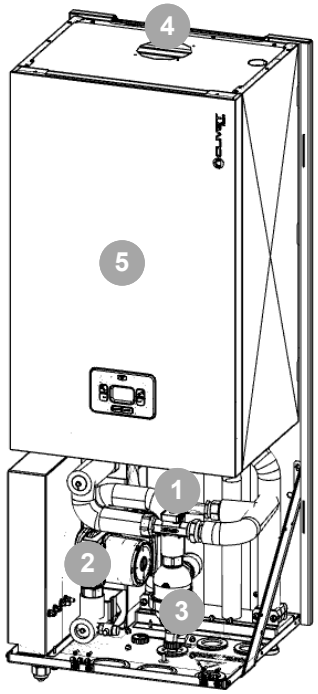


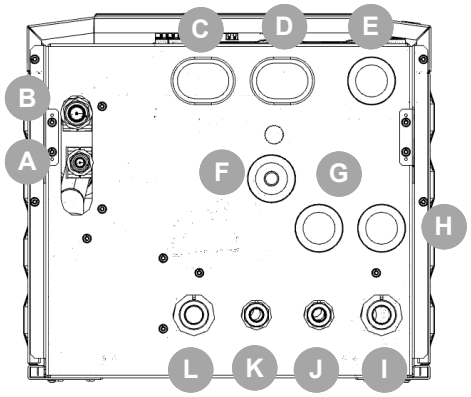
1	Supply line	
2	Exhaust fumes	
3	Elfocontrol[3] EVO (option)	
3.1	Ethernet max 90m (option)	UTP cat. 5
3.2	Power supply unit 12Vdc (option)	
3.3	Ethernet converter (option)	
3.4	RS485 on keyboard (option)	
4	System	
	System outlet	Ø 1”
	System return	Ø 1”

5	Boiler condensate drain	Provided by the
6	Gas line	Ø 3/4”
7	Outlet DHW	Ø 3/4”
8	Acqueduct input	Ø 3/4”
9	Refrigerant lines	
10	BUS	Max 50m
11	Unit condensate drain	Provided by the

Components

1. Flowmeter
2. System pump
3. Magnetic sludge
4. Boiler exhaust fumes
5. Boiler

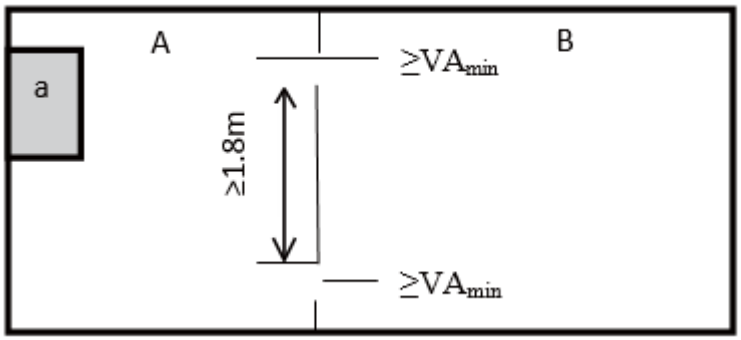




Connections

A. Liquid line Ø 3/8”
B. Gas line Ø 5/8”
C. Electrical connections input (power)
D. External unit connections output
E. Unit keyboard connections output
F. System drain / safety valves
G. Methane gas pipe inlet Ø 3/4”
H. Boiler condensate drain Ø DN25
I. System outlet Ø 1”
J. Acqueduct input Ø 3/4”
K. DHW outlet Ø 3/4”
L. System return Ø 1”

If the total refrigerant charge in the system is <=1.84 kg there are no minimum surface requirements.



a Indoor unit (wall mounting)

A Room where the unit is installed.

B Room adjacent to room A.

Area A+B must be greater than or equal to the minimum surface required in table 2 according to the total charge.

If the total refrigerant charge in the system is >=1.84 kg it is necessary to comply with the minimum surface requirements indicated in the following procedure:

1 calculate, based on piping length, the total refrigerant charge (mc)
2 calculate area room A (Aroom A)
3 calculate, through table 1, the maximum refrigerant charge allowed by room A (mmax)
4 **if mmax ≥ mc the unit can be installed in room A**

if mmax ≤ mc

1 calculate the area of room B adjacent to room A (Aroom B)
2 calculate, through table 2, the minimum total area (Amin total) required for the total refrigerant charge (mc)
3 **if (Aroom A + Aroom B) ≥ Amintotal**
4 calculate, through table 3.1 or 3.2, (depending on the power of the outdoor unit), the minimum area of natural ventilation opening between room A and room B
5 the unit can be installed in room A if

- There are 2 ventilation openings (permanently open) between room A and B, 1 at the top and 1 at the bottom.
- Lower opening: the lower opening must meet the minimum area requirements (VAmin). It must be as close to the floor as possible. If the ventilation opening starts from the floor, the height should be ≥20mm. The lower part of the opening must be less than 100 mm from the floor. At least 50% of the required opening area must be <200 mm from the floor. The entire area of the opening must be <300 mm from the floor.
- Upper opening: the upper opening area must be greater than or equal to the lower opening. The lower part of the upper opening must be at least 1.5 m above the upper part of the lower opening.
- Outward ventilation openings are NOT considered suitable ventilation openings (the user can lock them when it is cold).
- **if (Aroom A + Aroom B) < Amintotal** call the retailer

Table 1 - Maximum refrigerant charge allowed in a room: Indoor unit

A_{room} (m^2)	Maximum refrigerant charge in a room (m_{max}) (kg)
	H = 600 mm
1	0,138
2	0,276
3	0,414
4	0,553
5	0,691
6	0,829
7	0,967
8	1,105
9	1,243
10	1,382
11	1,520
12	1,658
13	1,796
14	1,934
15	2,072
16	2,210
17	2,349
18	2,487

- H: This is the release height; the vertical distance in millimetres from the floor to the lowest point of the unit when installed.
- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 2.
- For intermediate Aroom, values, consider the value that corresponds to the lower Aroom value from the table. If Aroom = 7.5m^2 consider the value that corresponds to Aroom= 7m^2.
- System with total refrigerant charge lower or equal than 1.84 kg are not subjected to any room requirements.

Table 2 - Minimum floor area: Indoor unit

m_c (kg)	Minimum floor area (m^2) (Amintotal)
	H = 600 mm
1,84	13,319
1,86	13,464
1,88	13,608
1,9	13,753
1,92	13,898
1,94	14,043
1,96	14,187
1,98	14,332
2	14,477
2,02	14,622
2,04	14,767
2,06	14,911
2,08	15,056
2,1	15,201
2,12	15,346
2,14	15,490
2,16	15,635
2,18	15,780
2,2	15,925
2,22	16,069
2,24	16,214
2,26	16,359
2,28	16,504
2,3	16,649
2,32	16,793
2,34	16,938
2,36	17,083
2,38	17,228
2,4	17,372
2,42	17,517

- For H values lower that 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 2.
- For intermediate mc value, consider the value that corresponds to the higher mc value from the table. If mc = 2,07 kg consider the value that corresponds to mc= 2,08 kg.
- Systems with total refrigerant charge lower or equal than 1.84 kg are not subjected to any room requirements.
- Charge above 1,80 kg are not allowed in the sizes 2.1 e 3.1.
- Charge above 2,22 kg are not allowed in the sizes 4.1 e 5.1.
- Charges above 2.41 kg are not allowed in the sizes 6.1, 7.1 and 8.1.

Table 3 - Minimuim venting opening area for natural ventilation: For units with a power rating of 8 to 10 kW.

m_c [kg]	mmax [kg]	Minimum venting opening area (cm^2) (VAmin
		H = 600 mm
2,22	0,1	1026
2,22	0,3	928
2,22	0,5	832
2,22	0,7	735
2,22	0,9	638
2,22	1,1	542
2,22	1,3	445
2,22	1,5	348
2,22	1,7	251
2,22	1,9	138
2,22	2,1	52

- For H values lower that 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 1.
- For intermediate mmax values, consider the value that corresponds to the higher mmax value from the table. If mmax = 0.6 kg consider the value that corresponds to mc= 0.7 kg.

Table 4 - Minimum venting opening area for natural ventilation: For units with a power rating of 12 to 16 kW.

m_c [kg]	mmax [kg]	Minimum venting opening area (cm^2) (VAmin)
		H = 600 mm
2,41	0,1	1118
2,41	0,3	1020
2,41	0,5	924
2,41	0,7	827
2,41	0,9	730
2,41	1,1	633
2,41	1,3	537
2,41	1,5	440
2,41	1,7	343
2,41	1,9	247
2,41	2,1	150
2,41	2,3	48

- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 1.
- For intermediate mmax values, consider the value that corresponds to the higher mmax value from the table. If mmax = 0.6 kg consider the value that corresponds to mmax= 0.7 kg.

Positioning

The installation has been implemented by qualified technical personnel only and that the instructions contained in the present manual and the local regulations in force have been adhered to.

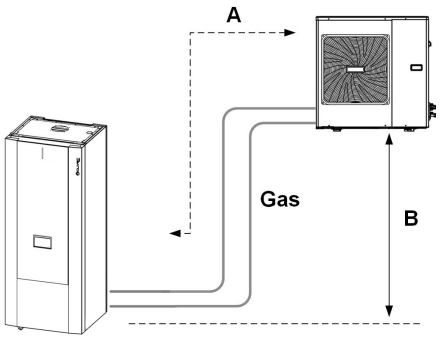
Choose the installation place according to the following criteria:

- customer approval
- safe accessible position
- guarantee good unit operation
- enough space for installation and maintenance shall be preserved.
- make sure that there's no obstacle around the unit
- the base surface should to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration
- carry out maintenance operations
- technical spaces requested by the unit
- water connections
- max. distance allowed by the electrical connections
- max. distance allowed by the refrigeranting connections
- control points with capacity adequate to the unit weight
- verify that all bearing points are aligned and leveled
- sound levels (TECHNICAL INFORMATION section) external unit

Maximum distance

Refrigerant pipes

Size			2.1 - 8.1
Refrigerant pipe min/max equivalent length	A	m	2 - 30
Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit	B	m	25
Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.	B	m	25



External unit

- Installed EXTERNAL
- in fixed positions

If the unit is installed on a roof or terrace, check the load capacity and the possibility for discharging the condensate.

Installation standards:

- spaces for the air intake/exhaust
- condensate water draining
- install the unit raised from the ground

Prefer places where the unit doesn't disturb the neighbours.

Avoid installations in places subject to flooding

Avoid installations next to bedrooms or windows.

Avoid snow accumulating obstructing for air ejection and suction

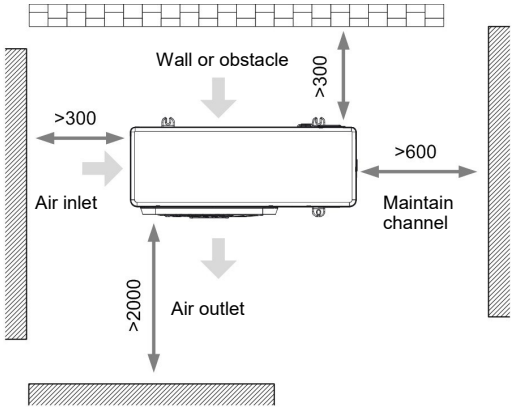
A correct circulation of the air is indispensible to guarantee the good working order of the machine.

Avoid therefore:

- obstacles to the airflow;
- exchange difficulties;
- leaves or other foreign bodies that can obstruct the exchange batteries;
- winds that hinder or favour the airflow;
- heat or pollution sources close to the unit (chimneys, extractors etc);
- stratification (cold air that stagnates at the bottom);
- recirculation (expelled air that is sucked in again);
- positioning below the level of the threshold, close to very high walls, attics or in angles that could give rise to stratification or recirculation phenomenons.
- Ignoring the previous indications could:
- energy efficiency decrease;
- blocks due to HIGH PRESSURE (in summer) or LOW PRESSURE (in winter).

1 Consider clearances and direction of expelled air. Single unit installation
2 Units side by side
3 Units in parallel
4 Keep the min. distances from the podestrian areas.
5 Avoid installations next to bedrooms or windows. Consider sound emissions
6 Provide windbreaks (or similar) in locations with strong winds.
7 Avoid snow accumulations on batteries. Install the unit lifted from the ground.

1



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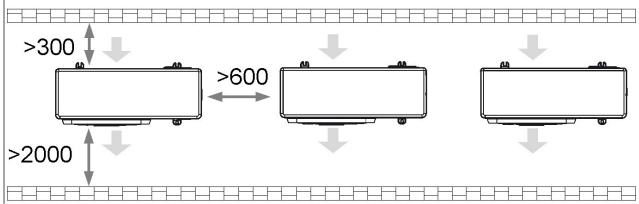

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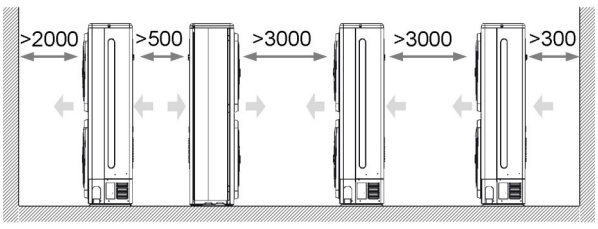

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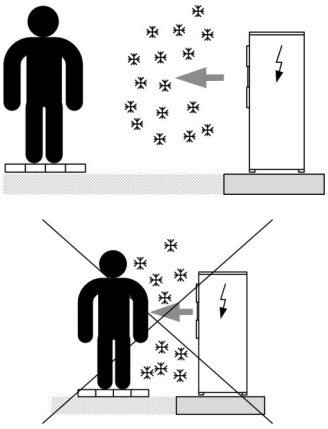

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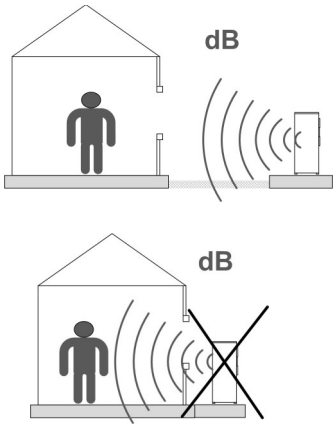

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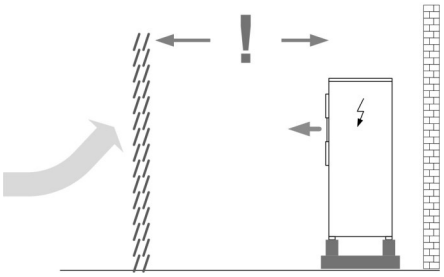

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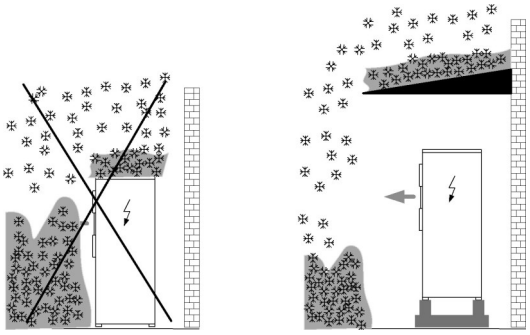


Installation

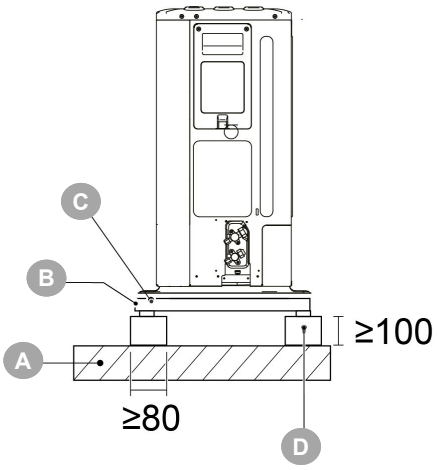
Check the strength and level of the installation ground so that the unit may not cause any vibrations or noise during its operation.

Prepare four sets each of Φ10 Expansion bolts, nuts and washers

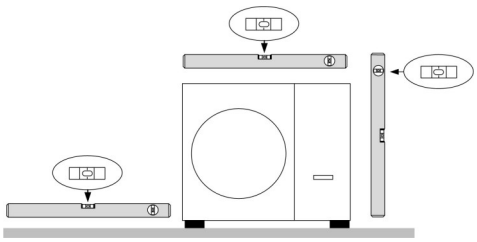
NOTE

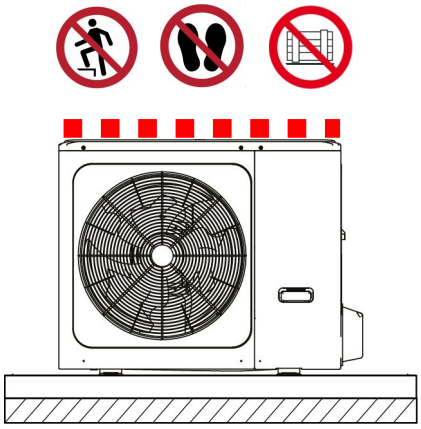
⇒ *Screw in the foundation bolts until their length is 20 mm from the foundation surface.*

A. Floor or roof
B. Neoprene strip
C. ø10 Expansion bolt
D. Concrete support base h ≥ 100mm



Levilling unit





Condensate drain

When a heat pump is running it produces a considerable amount of water due to the defrosting cycles of the external coil.

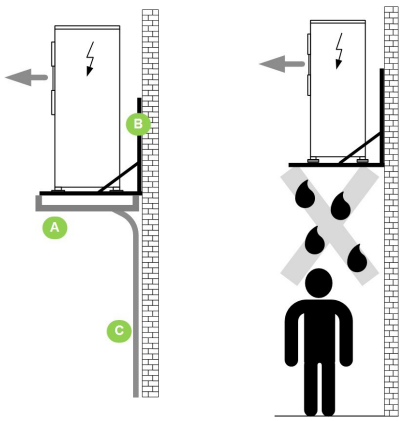
NOTE

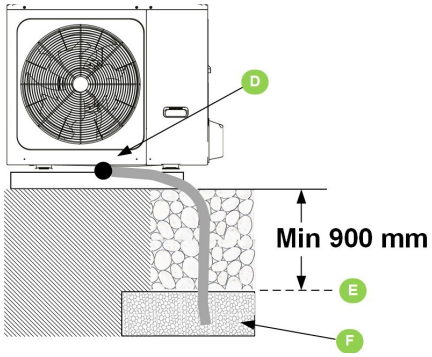
⇒ *The condensation must be eliminated in a manner to avoid wetting pedestrian areas.*

With extensive very cold outdoor temperatures, condensation could freeze outside the unit blocking the flow and causing a slow build-up of ice; therefore special attention must be paid to eliminating condensation, raising the unit off the ground and evaluating whether antifreeze elements should be installed.

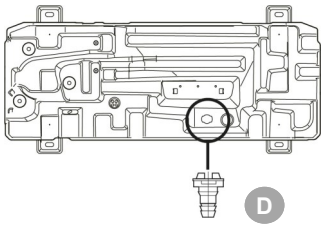
To avoid freezing of the water downstream of the drain lay the tube below the frost line (**E**).

A DTX = Condensation collection basin (Accessory separately supplied)
B Unit support ((Accessory separately supplied)
C Pipe discharge connection (Customer care)
D Condensate discharge connection Ø 30
E Frost line
F Layer of gravel or pebbles to help with condensate drainage
G This drain hole is covered by rubber plug. If the small drain hole can not meet the drainage requirements, the big drain hole can be used at the same time.

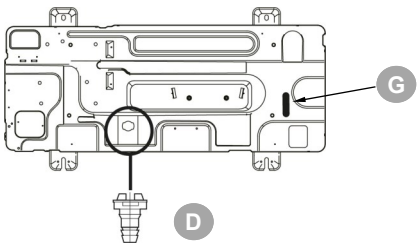




Size 2.1 – 3.1

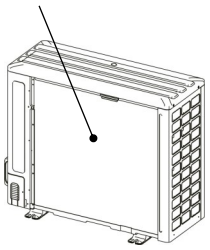


Size 4.1 – 8.1

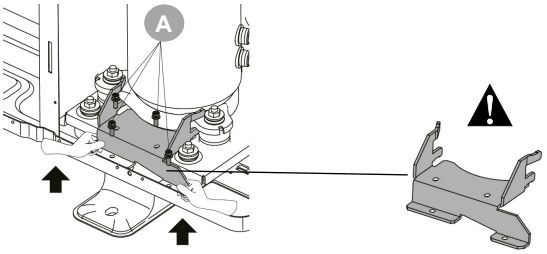


Remove the compressor fixing bracket (size 6.1-8.1)

Remove panel



Remove screws A



Internal unit

- installed inside
- in a dry room/compartment where the temperature cannot fall below 0°C degrees
- in fixed positions
- on a flat/vertical wall which is able to support the weight of the module
- the unit must always be handled by at least 2 people

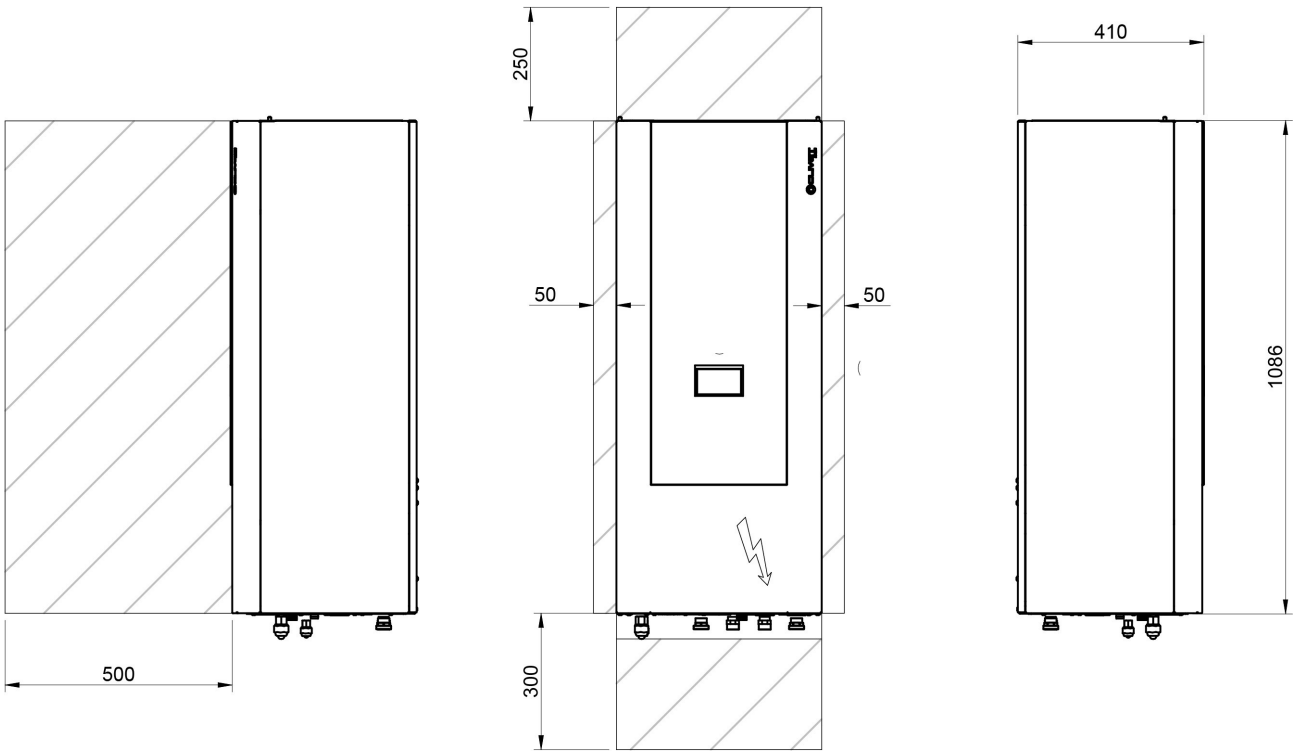
Keep to the indicated safety spaces.

Prefer places where the unit doesn't disturb the neighbours.

Avoid installations in places subject to flooding

Avoid installations next to bedrooms or windows.

The spaces can be occupied by objects that must be easily removeable in case of maintenance interventions.



Access to the internal parts / wall mounting / boiler installation

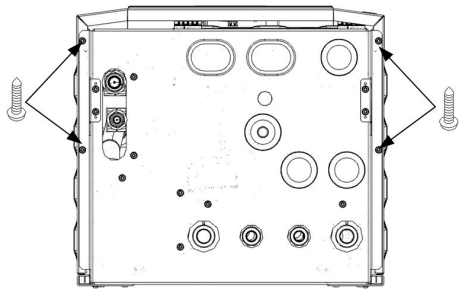
1 Remove the screws

2 Remove the panel

3 Fissaggio a muro (total weight with boiler 24kW = 70kg.; boiler 34kW = 79kg.)

4 Unit in fixed positions and in bubble level

1



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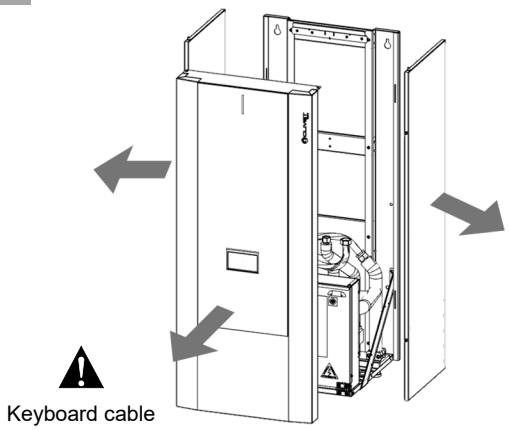

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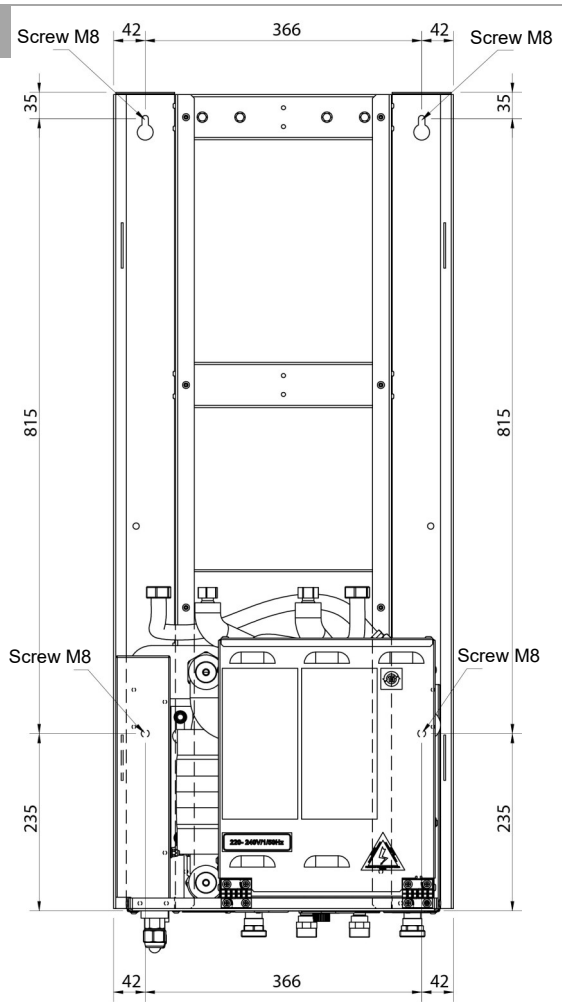
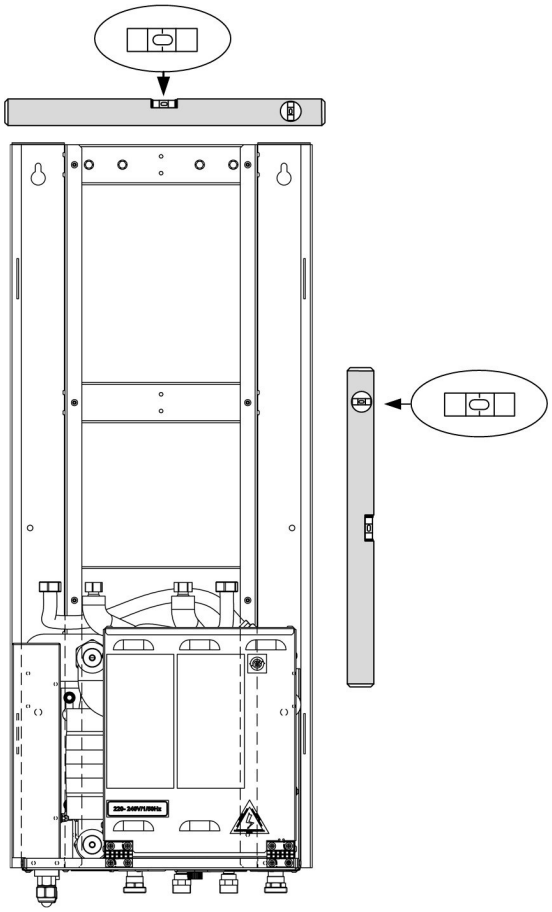


Screws / plugs not supplied

4



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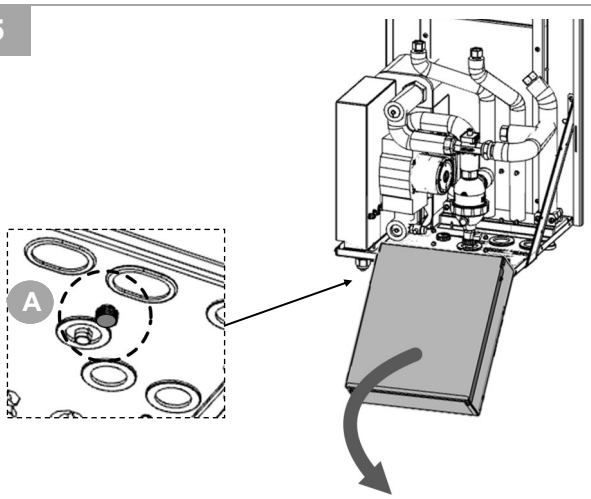
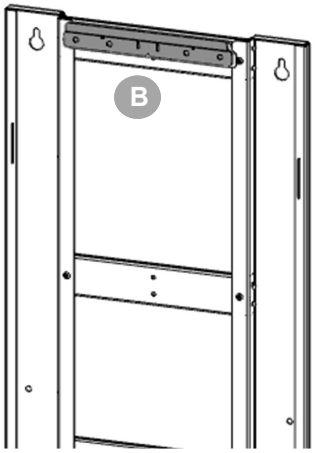


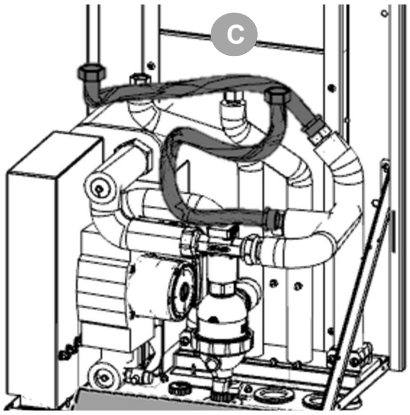
Unscrew the electrical panel lock knob (A)

6



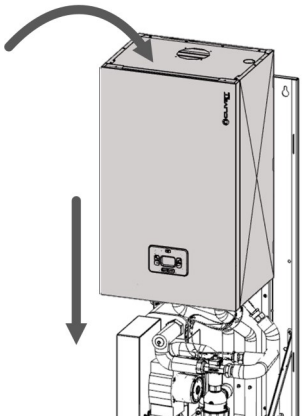
Install the boiler support bracket (B) with 4 M6 screws

7



Install pipes (C) + gaskets

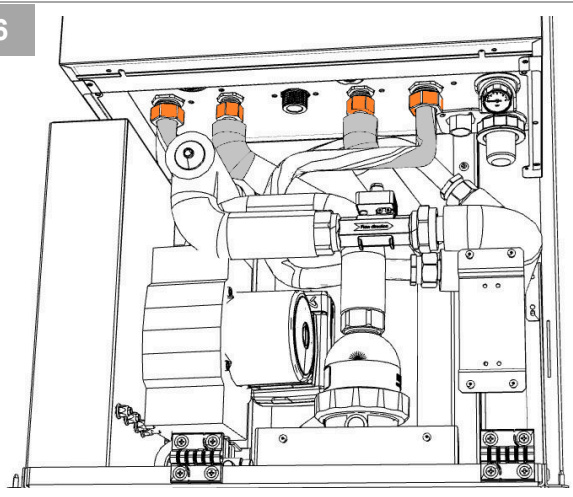
8



⚠ Provide the signal cable from the boiler to the electrical panel

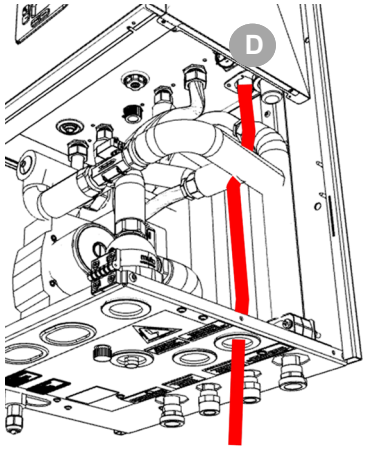
Hook up the boiler

6



Connect pipes + gaskets

7

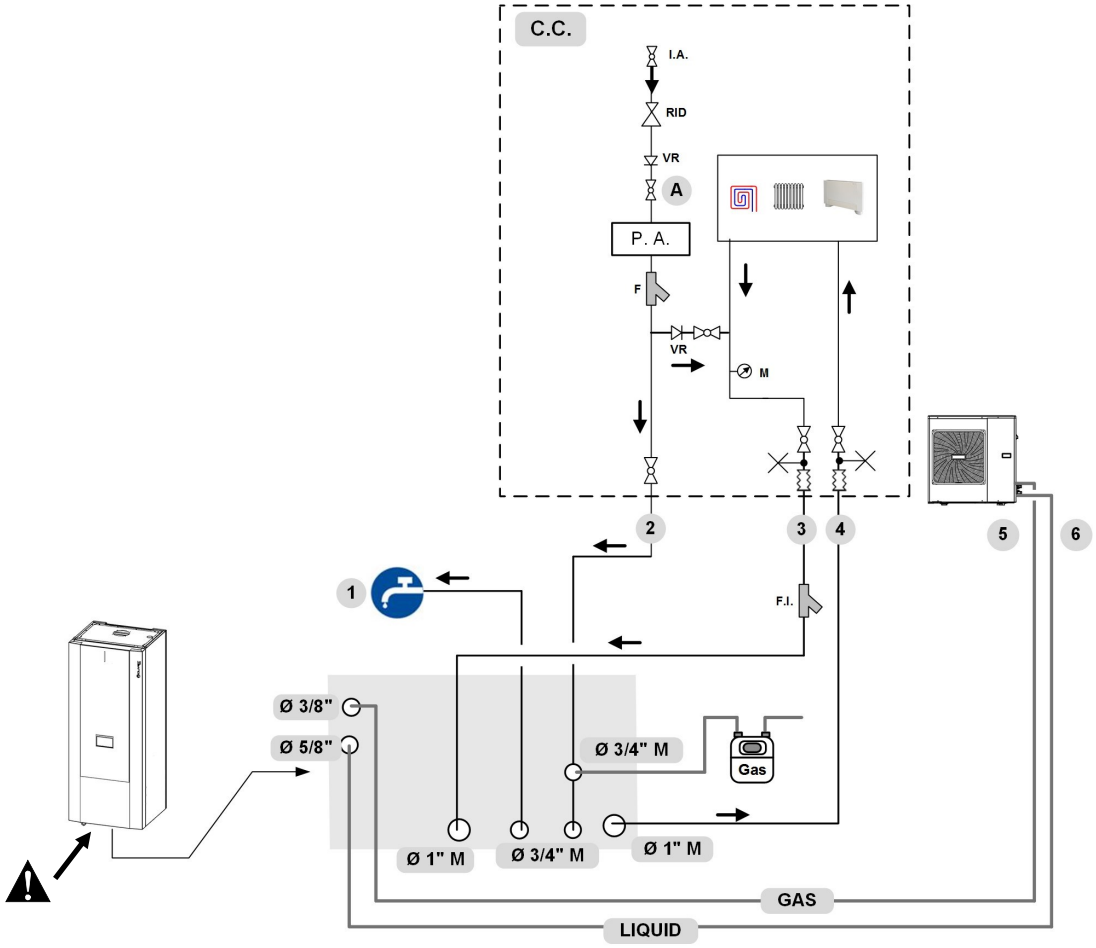


Install the boiler condensate drain pipe (D)

Connections see manual boiler

In the tightening operations always use the wrench and backup wrench.

Hydraulic connection schema



Isolate the pipes to avoid heat dispersions and formation of condensate.

Indicative plumbing diagram

The system components must be defined by Designer and Installer (ex. expansion tanks, vents, taps, calibration/safety valves etc.)

Indispensabile components system (not supplied)

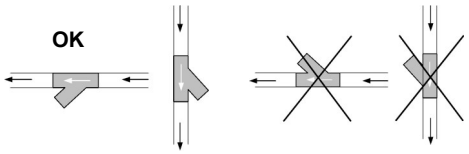
C.C	**Components provided by Customer**
A	System valve
I.A.	Aqueduct inlet
F	Water filter (provided by the customer)
F.I.	System filter
M	Pressure gauge
P.A.	Descaler protection
RID	Pressure reducing valve
VR	Check valve

1	DHW outlet
2	Acqueduct input
3	System water return
4	System water outlet
5	Refrigerant line (liquid)
6	Refrigerant line (gas)
	Vent
	Cut-off valves
	Anti-vibration joints

In the tightening operations always use the wrench and backup wrench.

An air bleed valve

Install the highest points of tubes in a way that the air can escape form the circuit.



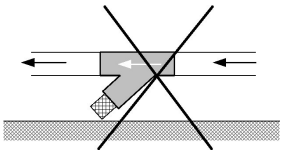
Water filter (provided by the client)

The filter is extremely important: it helps to lockout any impurities in the water and avoid clogging the system and heat exchanger.

It must be installed immediately at the entrance to the water mains, in a position that is easily accessible for cleaning.

The filter should never be re-moved.

Check for clogging from time to time

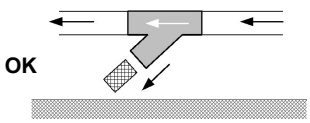


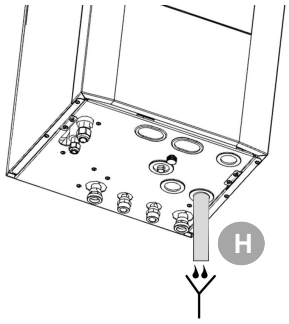
System filter

Must be installed on the system return

The filter must never be removed.

Check for clogging from time to time.





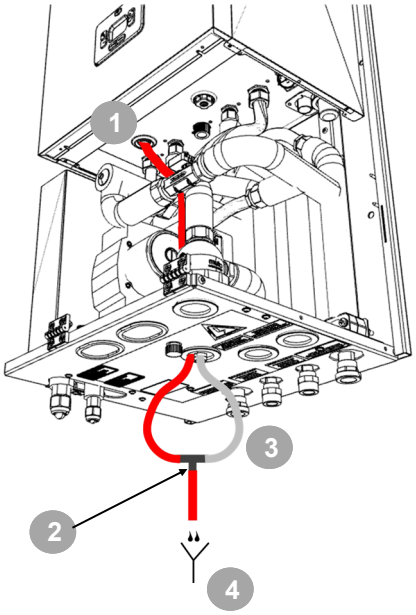
Connecting the indoor unit drains / saftey valve

- Connect a pipe to the safety valve (1) and to the "T" supplay (2) and to the magnetic sludge (3).
- Secure the pipe using a pipe clamp and place in an area suitable the drain accumulation / drain pit (4)

⇒ *Tubing by the customer (Ø15mm M)*

Inside the unit there is a safety valve (3 bar) that must be connected to a suitable drain, otherwise if valve intervened and flood the rooms, the heat pump manufacturer will not be responsible.

H	Boiler condensate drain Drain accumulation/drain pit	DN25

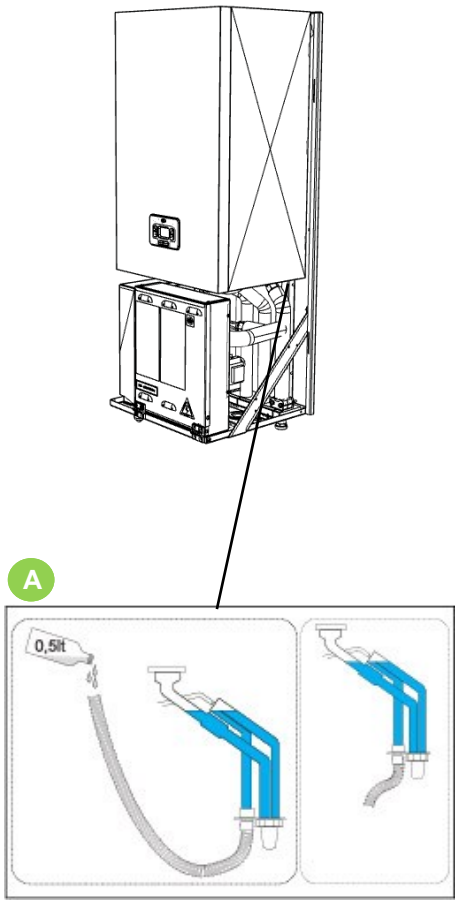


Boiler condensate drain

⇒ *The boiler condensate discharge, must be carried out properly in accordance with the legislation in force and/or national/ local regulations in force for wastewater discharge.*

NOTE

⇒ *Fill the trap A (see: boiler manual)*



Note

⇒ *If DHW (domestic hot water) storage is present, accessory supplied separately.*

Fill the storage tank (DHW) only during the unit start-up.

If the house is not immediately lived ,or the unit is turned off for long periods, empty the storage tank to avoid the stagnation of the water, or with temperatures close to 0°C the risk of freeze.

See the instructions for the accessory for details on cleaning the drain storage..

Water features

Note

⇒ *Circulators function well exclusively with clean and high-quality tap water.*

The most frequent factors that can affect circulators and the system are oxygen, limescale, sludge, acidity level and other substances (including chlorides and minerals).

In addition to the quality of water, installation also plays an important role. The heating system must be airtight. Choose materials that are not sensitive to oxygen diffusion (risk of corrosion...).

Characteristics of the water

· compliant with local regulations

· Langelier Index (LI) between 0 and +0.4

· within the limits indicated in the chart

Water quality must be checked by qualified personnel.

Hardness

If the water is hard, install a system suitable to preserve the unit from harmful deposits and limestone formation.

If necessary, install a water softener to reduce water hardness

Cleanliness

Before connecting the water to the unit, clean the system thoroughly with specific products effective to remove residues or impurities that may affect functioning. Existing systems must be free from sludge and contaminants and protected against build-ups.

New systems

In case of new installations, it is essential to wash the entire installation (with the circulator uninstalled) before commissioning the central installation. This removes residues of the installation process (welding, waste, joint products...) and preservatives (including mineral oil). The system must then be filled with clean high-quality tap water.

Existing systems

If a new boiler or heat pump is installed on an existing heating system, the system must be rinsed to avoid the presence of particles, sludge and waste. The system must be drained before installing the new unit. Dirt can be removed only with a suitable water flow. Each section must then be washed separately. Particular attention must also be paid to “blind spots” where a

Water component for corrosion limit on Copper		
PH	7,5 ÷ 9,0	
SO_4^{--}	< 100	
HCO_3^{-} / SO_4^{--}	> 1	
Total Hardness	8 ÷ 15	°f
Cl-	< 50	ppm
PO_4^{3-}	< 2,0	ppm
NH_3	< 0,5	ppm
Free Chlorine	< 0,5	ppm
Fe_3^{+}	< 0,5	ppm
Mn^{++}	< 0,05	ppm
CO_2	< 50	ppm
H_2S	< 50	ppb
Temperature	< 65	°C
Oxygen content	< 0,1	ppm
Sand	10 mg/L 0.1 to 0.7mm max diameter	
Ferrite hydroxide Fe3O4 (black)	Dose < 7.5 mg/L 50% of mass with diameter < 10 µm	
Iron oxide Fe2O3 (red)	Dose < 7.5mg/L Diameter < 1 µm	

lot of dirt can accumulate due to the reduced water flow. The system must then be filled with clean high-quality tap water. If, after rinsing, the quality of the water is still unsuitable, a few measures must be taken to avoid problems. An option to remove pollutants is to install a filter. Various types of filters are available. A mesh filter is designed to catch large dirt particles. This filter is usually placed in the part with the larger flow. A tissue filter is designed to catch the finer particles.

Exclusions

The warranty does not cover damage formed by limestone, deposits and impurities deriving from the water supply and/or by the malfunctioning of the system cleaning system.

Note

⇒ *If necessary, fit a water softener to reduce water hardness.*

Risk of frost

Note

⇒ *When the outside temperature gets close to 0°C, the water in the pipes and unit may freeze.*

⇒ *Frost may determine irreversible damage to the unit.*

⇒ *Frost damage is not covered by the warranty.*

If the unit or hydraulic connections are subject to temperatures close to 0°C:

- mix water with glycol, or
- safeguard the pipes with heating cables placed under the insulation, or
- empty the system in cases of long non-use

Anti-freeze solutions

Consider that the use of anti-freeze solution determines an increase in a pressure drop.

Make sure that the glycol type utilized is inhibited (not corrosive) and compatible with the water circuit components.

Do not use different glycol mixture (i.e. ethylene with propylene).

START-UP

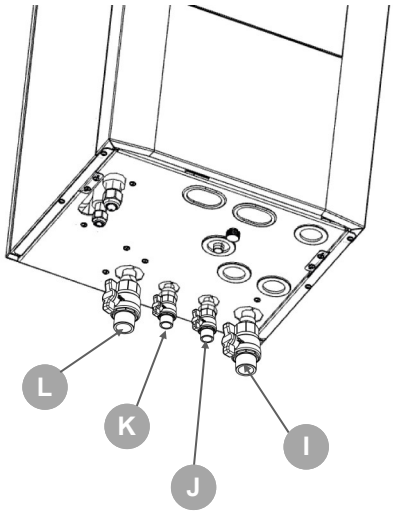
System charge heating/cooling

1 Switch OFF the unit
2 Start filling; open the filling tap located on the system
3 Open taps (L-I)
4 Open the vent valves of the terminals or radiators
5 Close them when water begins to exit; continue the charging until the pressure intended for the system (max.3 bar).
6 Check the hydraulic seal of the joints.

- Repeat the operation after the unit has operated for a number of hours and periodically control the system pressure. Reintegration is carried out when the unit is off (pump OFF).

Boiler

See: boiler manual "System filling"



L	System return
K	Aqueduct inlet
J	DHW outlet
I	System outlet
	Taps (provided by the customer)

Refrigerant lines

Unit is designed to ensure the best comfort and energy efficiency levels. To maintain these high values is necessary to consider the system details that could adversely affect on performances.

NOTE

In particular:

⇒ *the length of the refrigerant piping should be as small as possible ;*

⇒ *to realize a path of the pipes as straight as possible by limiting the presence of curves;*

⇒ *properly insulate pipes;*

⇒ *properly load the refrigerant system.*

NOTE

⇒ *An incorrect sizing can cause damage to the compressor or variations in the cooling capacity .*

When cut-off parts (solenoid valves, taps etc) are installed pay attention to the possible formation of traps for the refrigerant, meaning closed zones up or downstream in which the refrigerant is unable to expand freely.

With an increase in temperature under these circumstances (exposure to the sun, ducting close to heat sources etcs) the expansion of the trapped gas could cause an explosion in the refrigerating ducting. Evaluate the possibility of installing a safety valve especiallly in the ducting of the liquid which is exposed to the most risk.

The operations must be carried out by an expert refrigerationist .

Avoid curves with a too small curving radius.

Avoid squashing the pipes.

Provide anchoring rods to support the ducting (the weight must not be on the unit).

The rods must allow the thermal dilation of the ducting.

Place anti-vibrating material between the rods and the ducting to avoid the transmission of vibrations.

Clean with nitrogen or dry air before attaching the ducting to the two units.

The internal unit and the heat exchanger must be connected with refrigerating ducting suitable for the refrigerant used and covered with thermal insulation.

Warning:
Fire hazard
Flammable materials

Before starting light operations:

safety warnings for operations on units containing R32

Ducting

Pressure Equipment Directive

This unit is a subset: to operate it has to be combined to another unit.

It is an installer responsability :

- follow the PED Directive and to the national regulations of PED Directive realization
- consider the insertion of any additional security devices
- check the safety device operation
- write on the serial label number the amount of total refrigerant
- issue the Declaration of conformity
- inform the user of the need to carry out regular checks

NOTE

⇒ *Use only copper pipes for refrigeration, specifications for R32*

The installation of the pipes may affect the level of noise in the system:

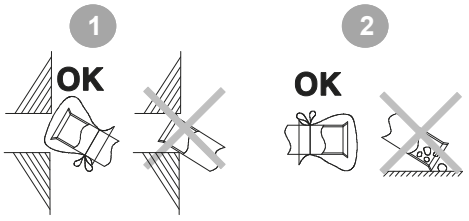
- install flexible joints between the unit and the pipes
- Install antivibration material between the brackets and the pipes so as to prevent the transmission of vibrations
- avoid the passage in particularly silent environments

Pipes must be clean.

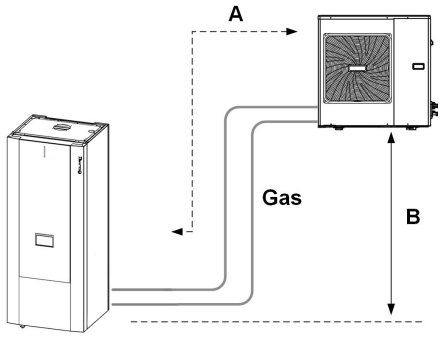
Plug the ends of the pipe prior to passing it through a hole in the wall (**1**).

Do not place the ends of pipes which have not been plugged or closed with tape directly on the ground (**2**).

If the installation of the pipes is not to be completed within the next day or for a long period of time, braze the ends of the pipes and introduce nitrogen oxide via a Schrader valve access joint to avoid the formation of humidity and the contamination of the particles.



Size			2.1 - 8.1
Refrigerant pipe min/max equivalent length	A	m	2 - 30
Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit	B	m	25
Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.	B	m	25



Equivalent length of the lines (metres) = Effective length (metres) + (Q.ty of curves x K)

Consider K=**0.3** m for wide radius 90° curves;

Consider K=**0.5** m for standard 90° elbow curves

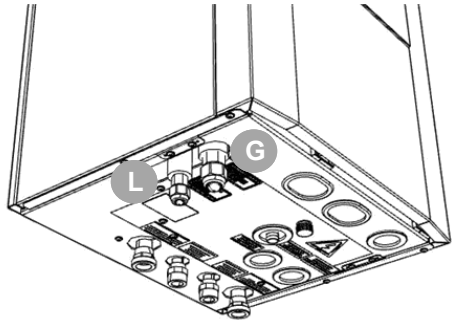
Internal unit

Before attaching the ducting to the two units, clean with dry air or nitrogen.

Type of pipes		
Size .	**2.1 – 3.1**	**4.1 – 8.1**
Liquid Ø external	1/4" (6,3mm)	3/8" (9,5mm)
Gas Ø external	5/8" (15,9mm)	5/8" (15,9mm)
Min. thickness gas	0,8 mm	
Min. thickness liquid	0,8 mm	

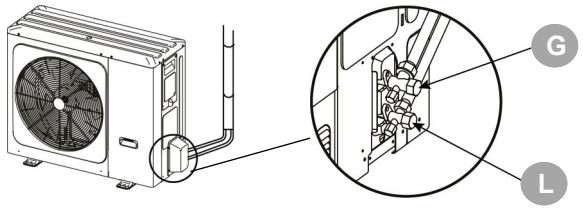
Refrigerating couplings

1 Internal unit



G	Gas line
L	Liquid line

2 External unit



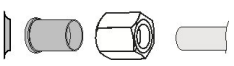
G	Gas line
L	Liquid line

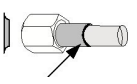
3

Use the components supplied with the unit or perform flaring to make the connections.

Refrigerating line fittings	
Size	**2.1 - 8.1**
	2x5/8" Gas line 2x3/8" Liquid line
	2x5/8" Gas line 2x3/8" Liquid line

 Reduction 10-6 for outdoor unit size 2.1-3.1

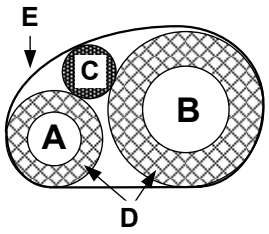


 Pipes supplied by the customer

Welding points

4

Insulate pipes.
Use insulation with resistance t = 120 ° C with a thickness of at least 13 mm.



A	Liquid ducting
B	Gas ducting
C	Electric cables
D	Insulation
E	Sheath - sticky tape

internal unit vacuum operation

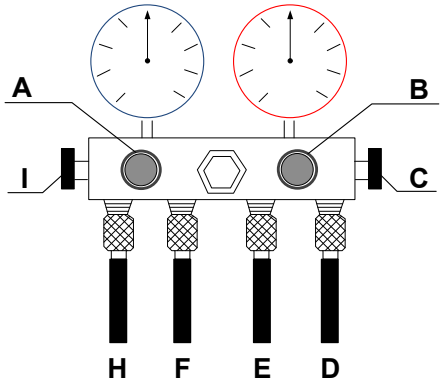
is delivered with charged refrigerator circuits in the following manner:

External unit charged with refrigerant				
Size		**2.1 - 3.1**	**4.1 - 5.1**	**6..1 - 8.1**
R32	**kg**	1,50	1,65	1,84
*** total charge**	**t CO2-eq**	1,02	1,11	1,24

NOTE

⇒ *The refrigerant charge present in the external unit is sufficient up to 15 meters of distance between the 2 units.*

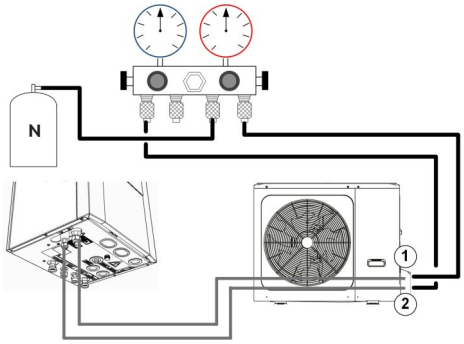
Lengths of ducting exceeding 15 metres		
Further refill for distance exceeding 15 metres		
Size	**2.1 - 3.1**	**4.1 - 8.1**
kg/m	0,02	0,038



A	**VAC** vacuum gauge cock
B	**REF** refrigerant cock
C	**HIGH** high pressure cock
D	liquid high pressure pump
E	Refrigerant pipe
F	Vacuum pump pipe
H	Low pressure pipe
I	**LOW** low pressure cock

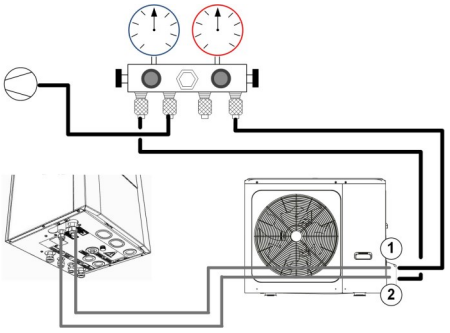
After having completed the refrigerating connections the sealing of the refrigerating circuit must be checked:

- maintain close the indoor unit cocks **1** and **2**
- connect pipes **D** and **H** to cocks **1** and **2**
- close cocks **A**, **B**, **C** and **I**
- connect **E** to the nitrogen cylinder
- open cocks **C** and **I**
- perform the tightness test
- **Mode 1:** open cock **B**, pressurize the circuit up to 45 bar (see the label) and wait few hours.
  Mode 2: open cock **B**, pressurize the circuit up to 65 bar (as according to UNI-EN 378-2 2009:PS x 1,43 law)
- spray using a leak detector spray cocks and pipes and check if bubbles are present (gas leaks)
- if everything is OK, proceed
- discharge the nitrogen from the unit

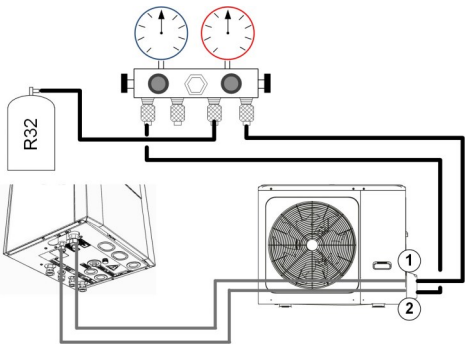


1	Gas line
2	Liquid line

- connect **F** to the vacuum pump
- open cocks **A, C** and **I**
- start the vacuum pump
- in optimal conditions, 15-60 minutes are required to create the vacuum. In the event of high moisture content in the piping or the temperature is < 20 °C, a few hours may be required
- reach the lowest value (approximately 1 mbar = 100 Pa.)
- close cock **A**
- turn off the pump
- overlap the red pointer of the vacuum gauge to the black one
- check the vacuum gauge to ensure that the pressure does not rise, for a few minutes
- if it rises, repeat the procedure
- if everything is OK, proceed



- connect **E** to the coolant cylinder
- open cock **B** to charge the coolant (see table "additional energy exchanger charge)
- close cocks **B**, **C** and **I**
- disconnect pipes **D** and **H** and cocks **1** and **2**



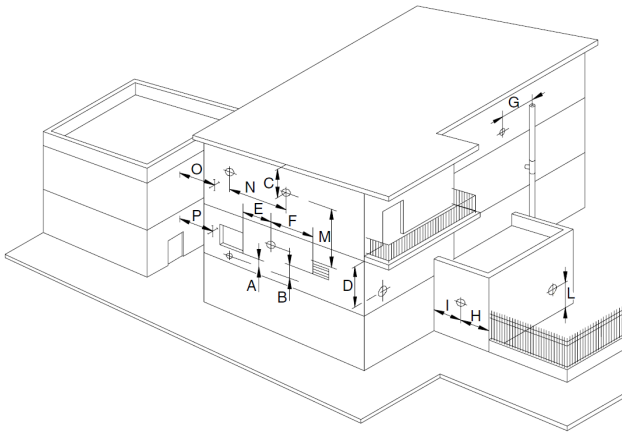
Drain pipe - by the costumer

For more details: see Boiler manual

The connections to the flues and the wall drains, where admitted, have a fundamental importance for the good operation of the boiler, and must be carried out by the qualified installer in compliance with the national and local technical regulations and standards in force.

The professional is responsible for identifying the applicable dispositions, evaluate case by case the compatibility with them and the need for any changes to the processed diagrams.

Wall drains positioning

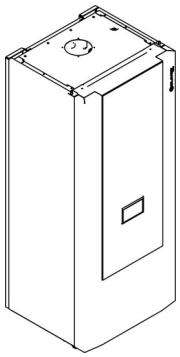


Drain positioning	Distancs	Boiler
		(mm)
Underneath window	A	600
Underneath aeration opening	B	600
Underneath waterspout	C	300
Underneath balcony **	D	300
From an adjacent window	E	400
From an adjacent aeration opening	F	600
From vertical or horizontal drains or piping ***	G	300
From a corner of the building	H	300
From a recess of the building	I	300
From the ground or other ground surface	L	2500
Between two drains in vertical	M	1500
Between two drains in horizontal	N	1000
Between 2 buildings without openings or drains within a range of 3 m from the fumes outlet	O	2000
Likewise, but with openings or drains within a range of 3 m from the fumes outlet	P	3000

** The drains placed underneath the balcony must protrude over its end, including the height of the protective railing (if present), must not be < at 2m.

*** The exhaust of the drain fumes has a high temperature and must not be in contact with flammable materials (e.g. wooden attics, plastic gutters, etc...) keep at distance not < 500 mm or adopt any protective measures.

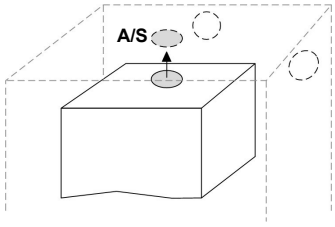
Unit



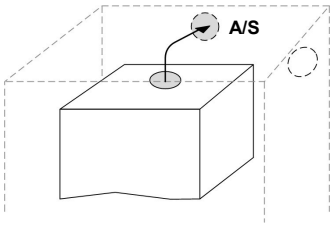
Possible coaxial tube outlets

A/S = return air / exhaust fumes

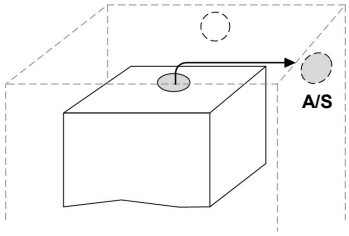
Top outlet



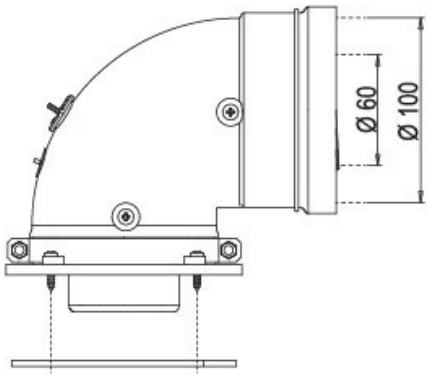
Rear outlet



Right outlet

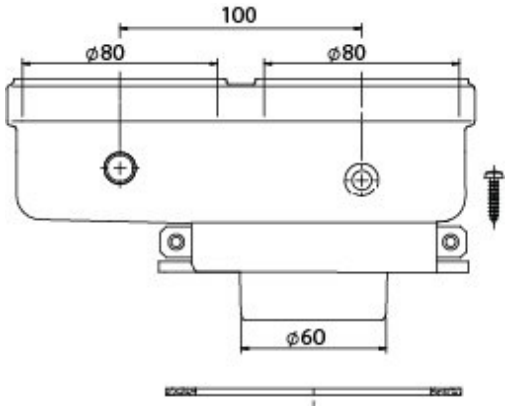


CCOAX - Horizontal coaxial curve Ø 60/100 adjustable at 360 °



Accessory separately supplied

KSDFX - Suction and exhaust fittings 80mm diameter



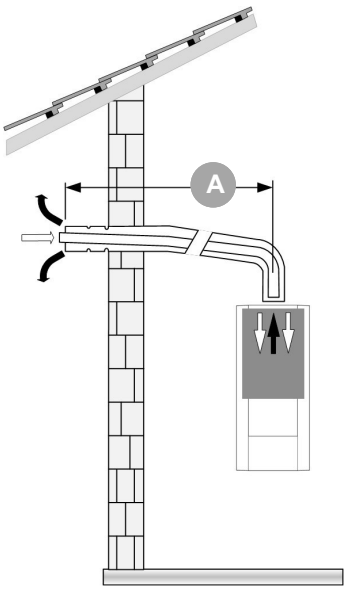
Accessory separately supplied

KCSAF - Vertical coaxial connection Ø 60/100

Accessory separately supplied

Coaxial drain length

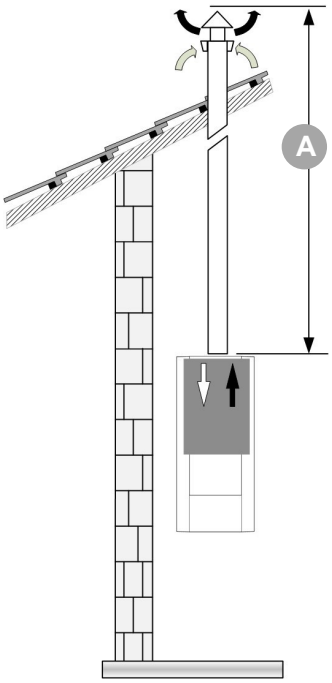
It allows flue gas emission and the intake of air from the outside wall.



A	Max 7 m

Coaxial drain length

It allows flue gas emission and the intake of air directly from the roof.

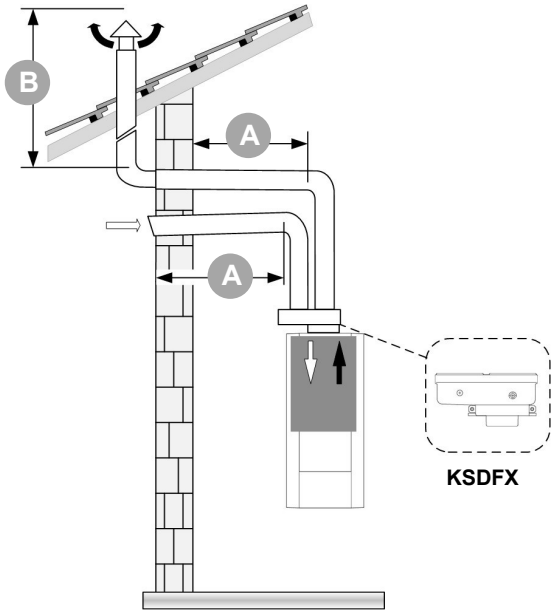


A	Max 7 m

Split drain length

The two-pipe system allows the flue gas emission along the flue and intake of air directly from the outside.

KSDFX - Suction and exhaust fittings 80mm diameter (accessory separately supplied)

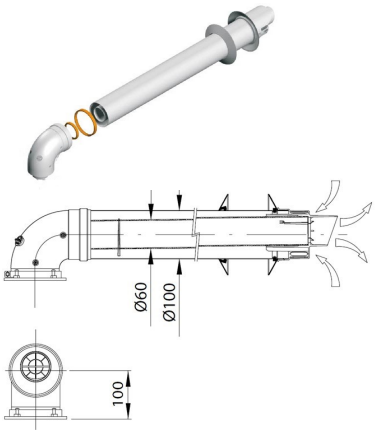


A	Max. 4 m Ø 80
B	Max. 22 m Ø 50 / Max. 60 m Ø 60

Connection to chimney, flue or wall drain where admitted, must be realised with the specific fumes drain kits (supply by the customer).

⇒ *Bear in mind that the insertion of every bend on the path entails the decrease of the maximum admitted length.*

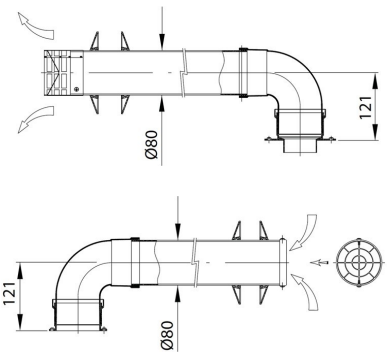
Coaxial drain Ø 60/100 (horizontal)



Bend	Maximum length reduction
90°	- 1 m
45°	- 0,5 m

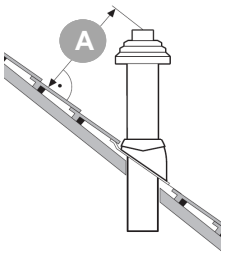
Split drain Ø 80/80 (horizontal)

KSDFX



Bend	Maximum length reduction
Air intake 90	- 1,5 m
Smoke exhaust 90	- 2,0 m

Roof drain

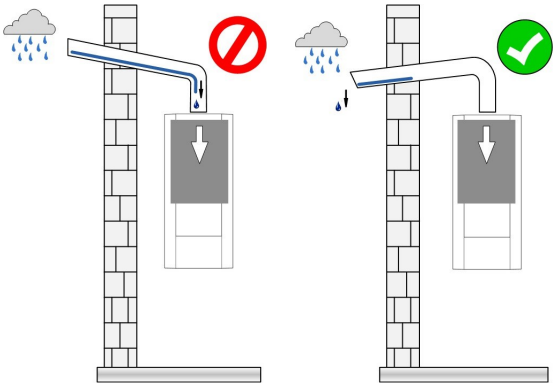


A	≥ 500	In areas with abundant snowfalls

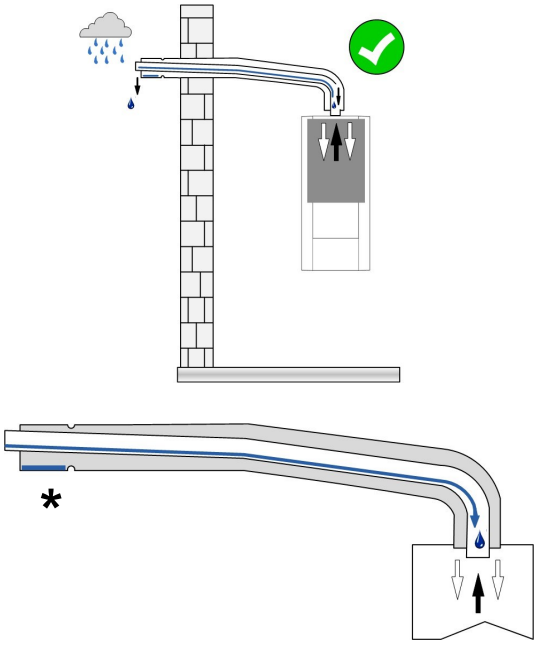
INSTALLATION EXAMPLES

Intake

Avoid the rain input



Coaxial pipe



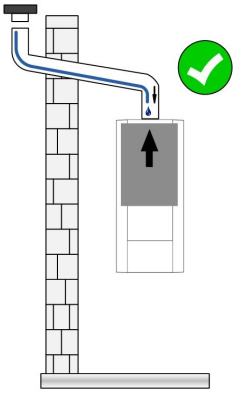
Uphill fumes, return of condensate

* Rib for rain block

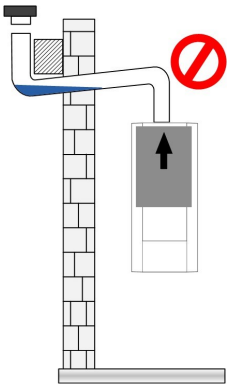
Drain

The flue gas emissions and collection of condensate must be carried out correctly according to the applicable national and local technical and regulatory provisions.

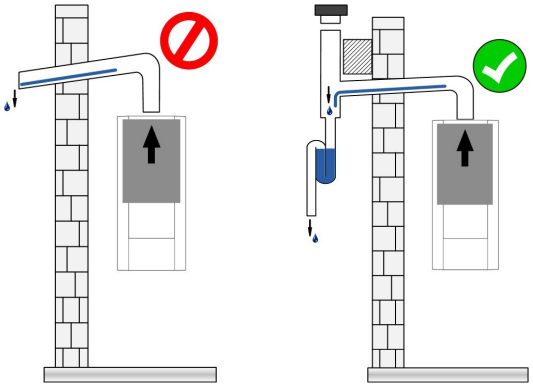
Allow the condensate return



Avoid condensate stagnations



Not dripping the condensate



Gas line connection

The gas connection must be carried out by the qualified installer in compliance with the national standards.

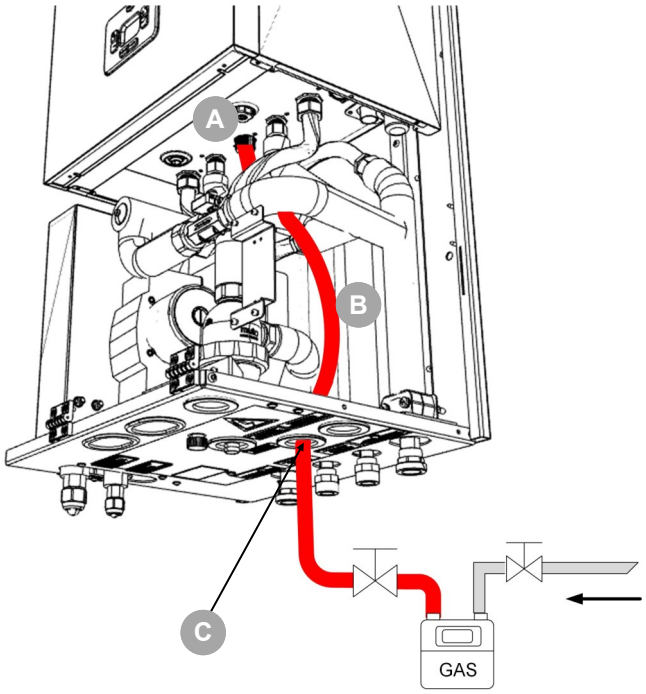
It is strictly forbidden to use hemp or teflon to connect the boiler to the gas mains.

This appliance must only be installed in adequately ventilated environments.

The air inlet must be positioned at floor level in a way that cannot be obstructed and is protected with a grille that does not reduce the air passage section.

1 Install a shut-off cock upstream of the appliance
2 Install a gas mesh filter on the tap mounted on the boiler if there is any danger of contamination of the gas
3 Check the distributed gas is the one for which the boiler was designed
4 The gas supply pressure falls within the values indicated on the data plate
5 The piping must be equipped with all the safety and control devices prescribed by applicable law
6 The piping must have an adequate section according to the required flow rate and its length
7 Clean all gas supply system piping to avoid any residues that might jeopardise the good operation of the boiler
8 Check the gas supply line is conform with the current prescriptions and standards
9 Check internal and external seal of the system and of the gas connections
10 Open the meter cock and bleed any air contained inside the system piping.

A. Gas inlet Ø 3/4" M flat seat.
B. Route the gas tube into the unit
C. Boiler gas hose routing



The boiler can function with the following modes :

- domestic hot water production in case of heat pump switch-off for inadequate functioning conditions (low external temperature)
- system heating without domestic hot water request and in case the heat pump is unable to reach the setpoint set within the envisioned times
- antilegionella cycles in the domestic hot water
- domestic hot water (it is not instantaneous, the accumulation is heated through the exchange coil) and system heating in integration, in replacement or in case of fault of the heat pump.

It is not possible to request electric heaters instead of the standard condensing boiler.

The system expansion vessel is the one in the boiler.

The characteristics of the lines must be determined by specialized personnel able to design electrical installations in compliance with regulations in force.

The protective equipment of the unit supply line must be able to shut-off the presumed short circuit current, which value must be determined in accordance with the system features.

The power cable and protection cable section must be defined in accordance with the characteristics of the protections adopted.

All electrical operations should be performed by trained personnel having the requirements envisaged by the regulations in force and informed about the risks relevant to these activities.

Operate in compliance with safety regulations in force.

Electric data

The serial number label reports the unit's specific electrical data, electrical accessories included.

The electrical data indicated in the technical bulletin and in the manual refer to the standard unit, accessories excluded.

The label reports the indications envisaged by regulations, in particular:

Voltage

F.L.A.: full load ampere, absorbed current at maximum admitted conditions

F.L.I.: full load input, full load power input at max. admissible condition

Electrical wiring diagram No.

Connections

Refer to the unit's electrical diagram (the number of the diagram is shown on the serial number label)

Verify that the electrical supply has characteristics conforming to the data shown on the serial number label.

Before starting work, ensure the unit is isolated, unable to be turned on and a safety sign used.

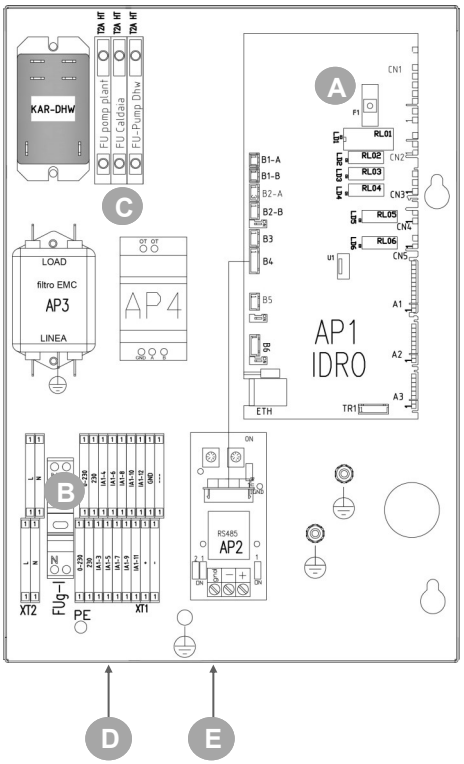
Ensure correct earth connection.

Ensure cables are suitably protected.

Before powering the unit, make sure that all the protections that were removed during the electrical connection work have been restored.

Internal unit fuses - 220-240/1/50

A	Fuse card
B	Fuse general
C	Fuse DHW pump
	Fuse pump/circulator
	Fuse boiler
D	Power input
E	Signal input



Internal unit connections

To access the panel see "Access to internal parts"

Carry out the connection in accordance with the electric connection layout.

Wiring size (mm^2) = 1,5

Stated values are maximum values (see electrical data for exact values).

Note

⇒ *The ground fault circuit interrupter must be a high-speed type breaker of 30 mA (<0.1 s).*

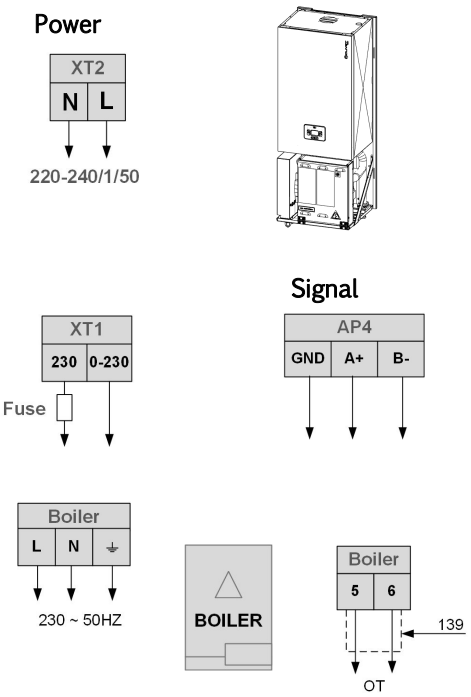
⇒ *Use a 3-conductor shielded cable.*

Boiler connections

Boiler communication.

Connect contacts 5-6 with OT (Open Therm) (connection "139 - Remote control" see boiler manual).

1-phase supply



Optional connections

Digital input configuration (password protected)

Different configuration combinations are available using inputs DI1 and DI2.

Configuration parameters

parameter **9 ConfigF-DI1**

parameter **10 ConfigF-DI2**

value	description
0 =	Ingresso disabilitato
1 =	Remote ON-OFF input DHW production with open contact is not active
2 =	Remote mode change input (hot/cold)
3 =	Remote system call input DHW production remains active even with open contact
4 =	Second remote system set point
7 =	Enable DHW resistance from digital Input up to SetHotH2O (photovoltaic function)

Remote ON/OFF

Enables the unit to be turned on remotely (e.g. by a thermostat or timer)

Remote mode change (hot/cold)

Enables the mode to be changed from heating to cooling by a remote control unit.

Remote system call

Enables the unit to be turned on in response to an environment heating signal (e.g. room thermostat)

Second remote system set point

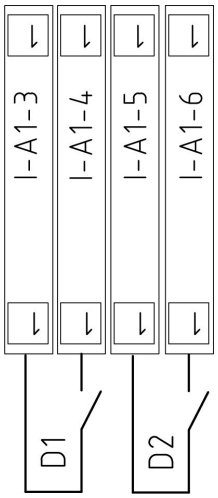
Enables a second ambient set point to be selected to minimise energy consumption.

DHW production from photovoltaic

The electric heater for the production of domestic hot water can be supplied by photovoltaics if excess energy is available.

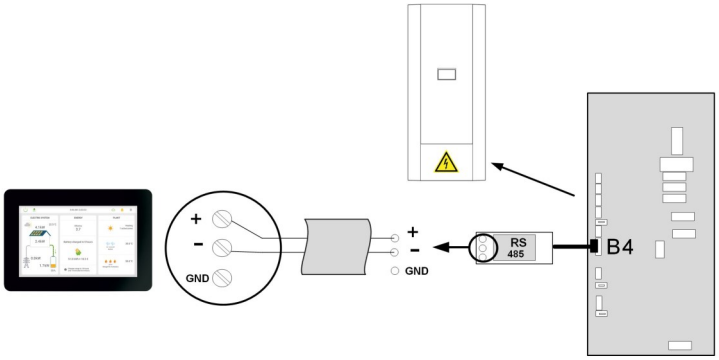
Enabling is via digital consent.

Terminal block of the customer connections



Supervisor (ozione)

The unit can be connected to Control4 NRG or an external supervisor system. In this case follow the connections as shown.



Connections						
Rif.	N° of connection	Section (mm^2)		Nominal capacity	Impedance characteristics	Recommended cable
		Min	Max	pF/m	Ω	
RS485	2 twisted and shielded	0,22	0,35	<50	120	BELDEN 3105A

Recommended cable Belden 3105A or others with equal properties

Configuration:

parameter	description	Extended description
101	Adress	ModBus supervision serial address
102	BaudRate	Baud Rate (0=4800 / 1=9600 2=19200) supervision serial
103	Parity	Parity 0=NO / 1=Odd 2=Even supervision serial

To use unit in a MODBUS network it is necessary to address the RS-485 MODULE by S3, S4, S5 ; allowed and valid addresses from 1 to 127

S5 - it sets the address hundreds : ON = 100, OFF = 0

S3 - it sets the address dozens

S4 - imposta le unità dell' indirizzo

S1 - 485 terminator : ON = termination YES

S2 - line polarizer

Inside the 485 network must be polarized only one board, usually is polarized tha master, i.e. the PC; in this case S2 = OFF

= polarization NO

If more cards are polarized, faults occur

J1 - RS 485 serial

J3 - TTL serial

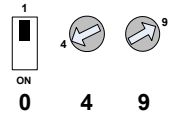
LV = green led : OK

LR = red led quick flashing::

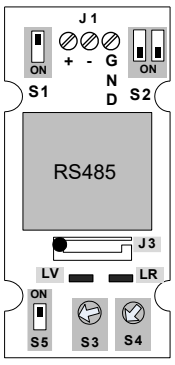
wrong address

faulty module

Example address 49:



Example address 120:



Addresses

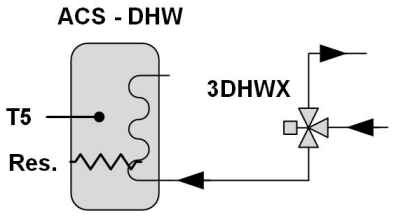
Connect RS 485 - TTL converter to port B4.

S5 = OFF

S3 = 0

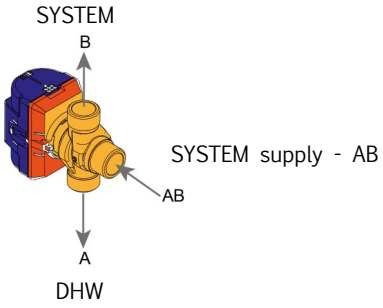
S4 = 2

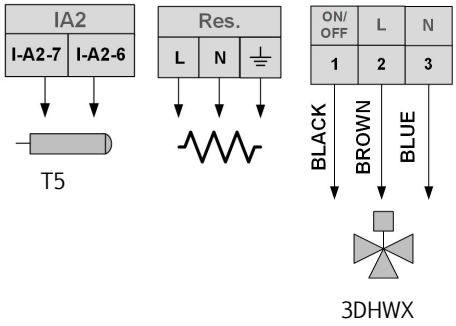
3 Three-way valve for domestic hot wate(option)



T5 = storage tank probe
3DHWX = 3-way valve
Res. = storage tank resistance not supplied

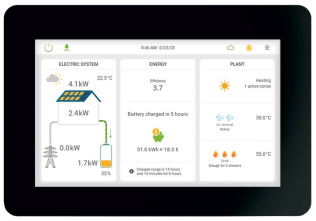
Parameters setting
Par. 1 TypeMachine = 2
Par. 3 EnH2OSan = 2
Par. 52 DelayValvs = H2Osanitary valve opening time





Control4 NRG (option)

For details, see instructions Control4 NRG manual

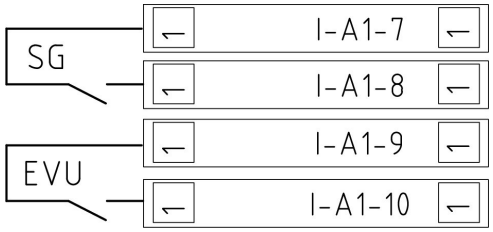


SMART GRID management - Photovoltaic

Energy cost	Contact		Electric heater available	Operation	
	SG	EVU		System	DHW
Free	Boosted	Boosted	-	Standard	When there is no demand for system heating/cooling: forced domestic hot water operation with T5S set point = 60°C
			IBH		
			TBH		Forced domestic hot water operation with T5S set point = 70°C. TBH is forcibly started until the domestic hot water set point is reached. If necessary, the Heat Pump can work simultaneously on the Heating/Cooling system.
Economical	OFF	Boosted	-	Standard	The domestic hot water set point is forced to T5S + 3°C.
			IBH		
			TBH		The domestic hot water set point is forced to T5S + 3°C The TBH is forced to start when T5 < T5S - 2°C and stops when T5 ≥ T5s + 3°C
Standard	OFF	OFF	Any	Standard	Standard
Expensive	Boosted	OFF	-	Immediate forced shut down	Immediate forced shut down **

* when IBH and TBH are enabled together, IBH can only be used for system heating.
** DISINFECT, FAST DHW, STORAGE TANK and other domestic hot water-related functions do not work.
Note: frost protection and defrosting operate smoothly in all conditions.
Note: if AHS is available, it can operate for Heating, Cooling or DHW in any of these conditions.

Terminal block of the customer connections



External unit connections

Carry out the connection in accordance with the electric connection layout.

Remove the protective cover (A)

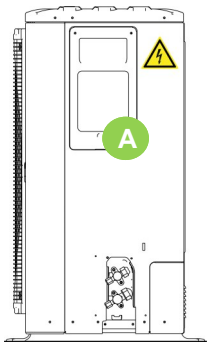
Unit (kW)	1-phase			3-phase
	2.1-3.1	4.1-5.1	6.1-8.1	6.1-8.1
Maximum overcurrent protector (MOP)	18	19	30	14
Wiring size (mm^2)	4	4	6	2,5

Stated values are maximum values (see electrical data for exact values).

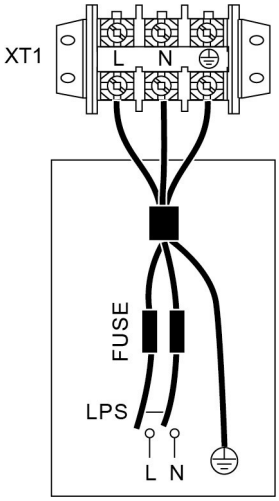
Note

⇒ *The ground fault circuit interrupter must be a high-speed type breaker of 30 mA (<0.1 s).*

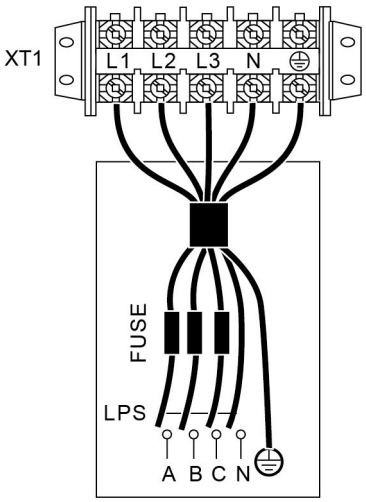
⇒ *Use a 3-conductor shielded cable.*



1-phase supply

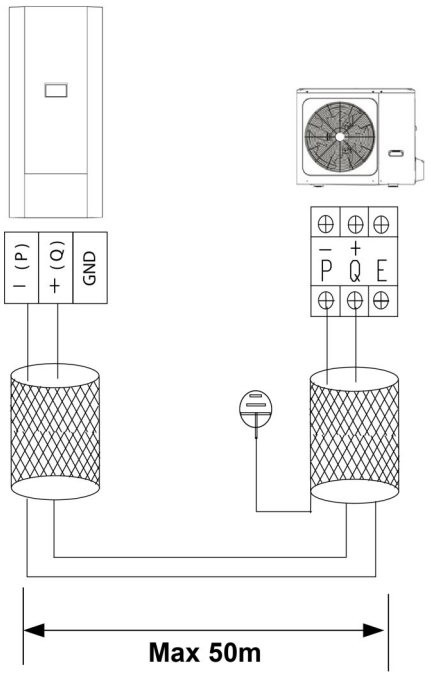


3-phase supply



Bus connections

Use a 2-conductor shielded cable as an internal/external signal cable, and earth the shielding.



Cable type	2-core shielded wire 0,75 - 1,25 mm^2 (AWG18-AWG16)

General

The indicated operations should be done by F.GAS qualified technician with specific training on the product.
Upon request, the service centres performing the start-up.
The electrical, water connections and the other system works are by the installer.
Agree upon in advance the star-up data with the service centre.
Before checking, please verify the following:

- the unit should be installed properly and in conformity with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no tension is present

WARNING

⇒ *After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.*

⇒ *Before accessing check with a multimeter that there are no residual stresses.*

Preliminary checks

The following check list is a brief reminder of the points to check and of the operations to perform to start -up the unit.
For details on the points mentioned in the check list refer to various chapters of the manual.

	√	**Preliminary checks**
1	☐	Are the functional spaces of the internal unit and the external unit being observed ?
2	☐	Is the section of the cooling lines correct ? Have the supplied sealing couplings been used ?
3	☐	Does the equivalent length of the refrigerant piping exceed 2 or ≤30m?
4	☐	Is the height different of the refrigerant piping below 25m?
5	☐	Have emptying and additional load been carried out ? Was there a visual check for oil / leaks ?
6	☐	Water features are suitable? The hydraulic system has been cleaned?
7	☐	Is the water filter from the waterworks inlet correctly installed ?
8	☐	Is the system filter on the supply correctly installed?
9	☐	Are the inlet and outlet of the water lines correct ?
10	☐	Is there a non-return valve on the DHW recirculation line?
11	☐	Present safety valve on the DHW side?
12	☐	Present expansion vessel on the DHW side?
13	☐	Has the compressor support bracket been removed?
14	☐	Does the system contain the minimum required amount of water?

15	☐	Are the anti-vibration joints on the hydraulic connections present ?
16	☐	Was the system loaded, placed under pressure and was the air let out ?
17	☐	Have you verified the expansion tank charge ?
18	☐	Is the solar installation present? The circuit is charged?
19	☐	Was the condensate produced by the external unit drained correctly ? Can it freeze ?
20	☐	Have the electrical connections to the external unit been made ?
21	☐	Earthing connection?
22	☐	ELFOControl^3 EVO is correctly installed? (Only if present)
23	☐	Have optional electrical connections been made ? (summer/winter, second set, etc....)
24	☐	Is the power supply correct ? Is the available power supply sufficient ?
25	☐	Are the system temperature and the room temperature with the operating limits ?
26	☐	Is the screed "dry" ? (only in presence of radiant panels)

Start-up sequence

Unit power supply ON

	√	Start-up sequence
1	☐	Has the carter resistance been charged for at least 8 hours ?
2	☐	Select keyboard language
3	☐	Set date and time
4	☐	Sanitary water and system personalisation
5	☐	Personalise anti-dew compensation (if radiant panels are present) only from ELFOControl^3 EVO
6	☐	Enable solar (if present)
7	☐	Compile documentation

Refrigerant circuit

1 Visually inspect the refrigerating circuit: the presence of oil stains can by a symptom of leakage (caused e.g. by transportation, handling or other).
2 Verify that the refrigerating circuit is in pressure: Using the unit manometers, if present, or service manometers.
3 Make sure that all the service outlets are closed with proper caps; if caps are not present a leak of refrigerant can be possible.
4 Open all of the refrigeration circuit shut-off valves (if applicable).

Hydraulic circuit

1 The unit is fitted with a flowmeter that is used as a safety device and cannot be bypassed due to warranty purposes.Carry out the following checks when starting the unit:
- circulator stopped > zero flow-rate readin;
- circulator working > flow rate reading greater than the minimum.
If one of these two conditions does not occur, the unit displays a water flow error.
2 Before connecting the unit to the hydraulic system, make sure that the hydraulic system has been washed and that the water has been drained
3 Check that the hydraulic circuit has been filled and pressurized-
4 Check that the shut-off valves in the circuit are in the "OPEN" position.
5 Check that there is no air inside the circuit, and bleed it through the vent valves in the high points of the system if necessary.
6 When using antifreeze solutions, make sure the glycol percentage is suitable for the type of use envisaged.

NOTE

⇒ *Neglecting the washing will lead to several filter cleaning interventions and at worst cases can cause damages to the exchangers and the other parts.*

Weight of glycol (%)	10	20	30	40
Freezing temperature (°C)	-3.9	-8.9	-15.6	-23.4
Safety temperature	-1	-4	-10	-19

Electric circuit

Check the unit is connected to the earthing system.

Check the conductors are tightened as: the vibrations caused by handling and transport might cause these to come loose.

Power the unit by closing the isolation device but leave in OFF.

Check the network frequency and voltage values, which must be within the limits:

220/240V +/- 10%

50 Hz +/- 1%

NOTE

⇒ *Working outside of these limits can cause irreversible damages and voids the warranty.*

Anti-legionella

Enable the function:

Par 69 Enable anti-legionella (1= enable)

Par 70 Antil-egionella set point (password-protected).

Anti-legionnella scheduling

The anti-Legionnaire's disease cycle disinfects the DHW thermally. The unit is delivered with a set point of 65°C (par. 70, password protected).

The scheduling allows to set :

- Cadence:
  - Disabled
  - Weekly
  - Monthly
- Day
- Start hour

⇒ *We recommend a weekly or monthly schedule.*

Screed heating

Only with radiant panels

Procedure to follow in the event of winter mode start-up in cold environments and screed to be heated or a new non-dry screed.

1 Close the heads
2 Leave only one area active
3 Start the unit with the ACS enabled
4 Wait for the area to reach the temperature
5 Repeat steps 2 and 3 for each area

⇒ *Starting all the areas simultaneously can block the unit.*

⇒ *Do not start the system during the winter in rooms without fittings.*

Anti-dew compensation

The function is necessary in applications with radiant panels and keypad in environment (environment thermostat).

The set point is limited downwards in order to avoid the formation of condensate on the floors.

The function may be enabled through parameter, it is only active in cooling.

Configuration :

parameter	description	circuit
427	Anti-dew compensation enabling	C2

Solar setup - option

If the solar circuit is present, enable the function as the menu.

The solar activates when the Solar temperature > 8 °C than the temperature in the accumulation, and remains active until 80 °C.

Configuration:

par.59 EnSolare: 0 = not enable
1 = enabled on DHW
2 = enabled on DHW and system

Recirculation DHW calibration

DHW recirculation, if foreseen in the system, is carried out by making the sanitary water circulate through the unit pump.

The pump alternates ON and OFF cycles with duration that may be set by parameters (password protected):

par.74 Recirculation Time OFF
par.75 Recirculation Time ON.

The recirculation function is active only at the times foreseen by the DHW scheduler:

- Maintenance +recirculation
- Reload + recirculation

The parameters are the same that manage the anti-stratification recirculation in the DHW accumulation.

The recirculation still causes some inefficiencies (thermal dispersions in system piping etc.) therefore duration and frequency will have to be optimised for the system.

Compressor casing resistances

Connect the compressor oil heating resistances at least 8 hours before the compressor is to be started:

- at the first unit start-up
- after each prolonged period of inactivity

1 Power the heaters: isolator switch on 1 / ON.
2 Check the power consumption of the resistances to make sure that they are functioning.
3 Start-up the compressor only if the crank-case temperature on the lower side is be higher than the outside temperature by at least 10°C .
4 Do not start the compressor with the crankcase oil below operating temperature.

Starting report

Reading the objective operating conditions is useful for checking the unit over time.

With unit of full load, namely in stable conditions and close to those of work, take the following data:

- Voltage and general absorptions with unit at full load
- Absorption of varied electrical loads (compressors, fans, pumps etc)
- Temperatures and capacities of different liquid (water, air) in the inlet and outlet of the unit.
- Temperature and pressures on the characteristic points of the refrigerating circuit (compressor discharge, liquid, intake).

The readings should be stored and made available during maintenance .

2014/68/UE PED directive

DIRECTIVE 2014/68/UE PED gives instructions for installers, users and maintenance technicians as well.

Refer to local regulations; briefly and as an example, see the following:

Compulsory verification of the first installation:

- only for units assembled on the installer's building site (for ex. Condensing circuit + direct expansion unit)

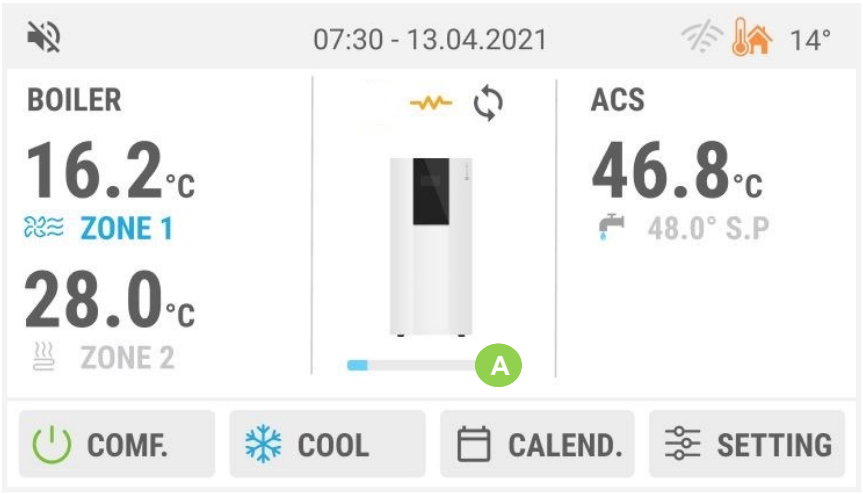
Certification of setting in service:

- for all the units

Periodical verifications:

- to be executed with the frequency indicated by the Manufacturer (see the "maintenance inspections" paragraph)

MULTIFUNCTION KEYPAD - TOUCH SCREEN



Display

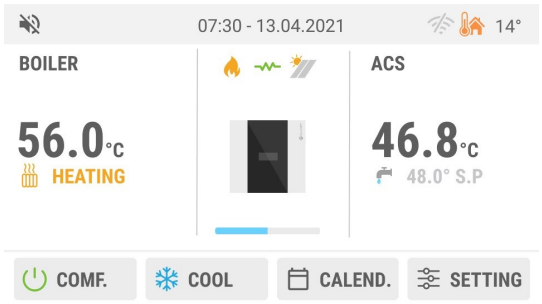
	Active Silent mode		System status		DHW
	Active SuperSilent mode		Cooling		Anti-legionella
	Fan coil		Heating		Active alarm
	Radiant panels		Scheduling		Alarm on progress
	Radiators		Setting	**16.2°C**	Zone 1 temperature
	Defrosting		DHW recirculation	**28.0°C**	Zone 2 temperature
	DHW + HP (heat pump)		Solar apnel (if present)	**46.8C**	Actual DHW temperature
	DHW + Boiler		Outside air temperature	**48.0°C**	DHW setpoint
	DHW + Resistance		Wi-fi	**A**	Display unit in operation
	DHW + solar (if present)		Electric heater		

The main screen changes according to the type of system

The installer is responsible for configuration.

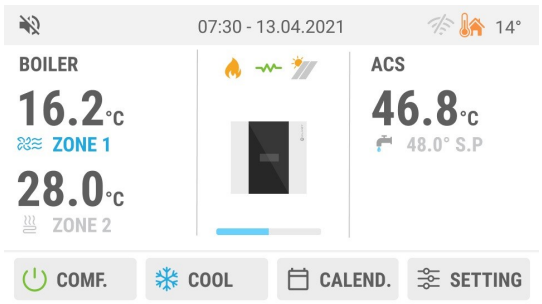
BOX configuration

1) 1 single zone system + Instant DHW



Configuration
Setting -->Parameter
35EnCircuiti = 0

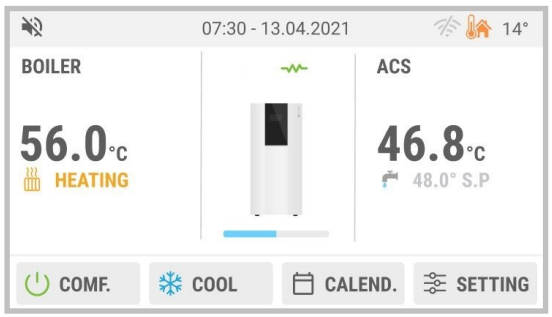
2) double zone system + Instant DHW



Configuration
Setting -->Parameter
35EnCircuiti =1 or 2

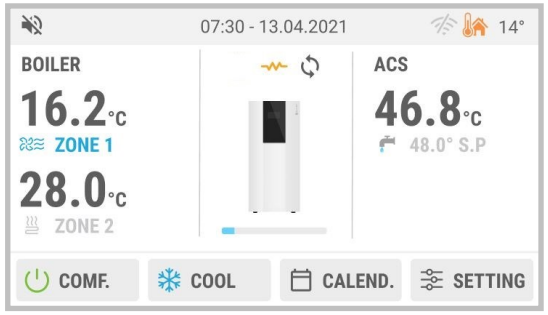
TOWER configuration

1) 1 single zone system + DHW



Configuration
Setting -->Parameter
12EnH2OSan = 1
35EnCircuiti = 0

2) double zone system + DHW



Configuration
Setting -->Parameter
12EnH2OSan = 1
35EnCircuiti =1 or 2

Menu structure

Press 5s

Heat pump

Boiler only (heat pump excluded)

Normal operation (operation dependent on circuit demand)

Settings

Climatic Zone 1 (fixed / compensated)

Climatic Zone 2 (fixed / compensated)

Press

System status

Off

Economy

Comfort

Programmed

DHW only

Press

System mode

Cooling

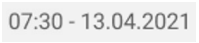
Heating

Automatic

Press

Zone Setpoint

Zone 1 / Zone 2 setpoint temperature



Press 5s

Date and hour

Year / month / day / hour / minute

Press

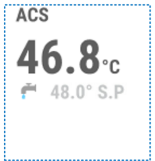
Calendar

Unit scheduling

Dhw scheduling

Timed forcing

Anti-legionella



Press 5s

DHW

Normal operation (operation dependent on DHW demand)

Only solar thermal (the DHW storage tank is heated only by the solar panels)

Boilr only (the heat pump is excluded)

Reload now (Boost) Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint)

Exclude

Settings

Anti-legionella set

Recirculation enable

Charging mode

Press 5s

Stata I/O

DI01
DI02
DI03
Ecc....

Press

Operation status

Set point
T. external
T. return
T. supply
Ecc..

SETTING

Press

Setting *

Parameter
Keyboard
- language
- Brightness
- Upload language files (**)

Info system
- HMI
- IDU Mainboard
- ODU Mainboard
- Double Zone Mainboard (only if enabled secondary)

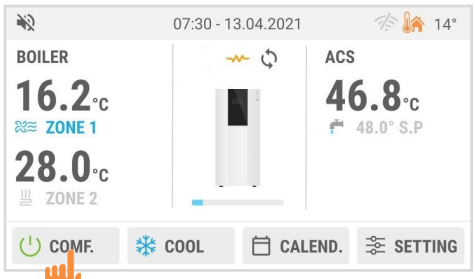
Alarms (if active alarms are present)
Alarms log
Installer functions
WiFi configuration
Cloud configuration
Export parameters (**)
Update parameters (**)
Update firmware (**)

(*) Visible only after having entered the password
(**) Only with USB connected

System controls

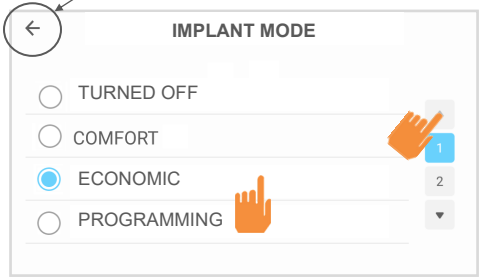
Controls:

- Off
- Comfort (set the circuit water setpoint for optimal ambient comfort)
- Economy (optimises the circuit water setpoint for reduced power consumption)
- Timer automatic (operation dependent on the weekly timer + DHW timer settings)
- DHW only (the unit is only active for DHW production)

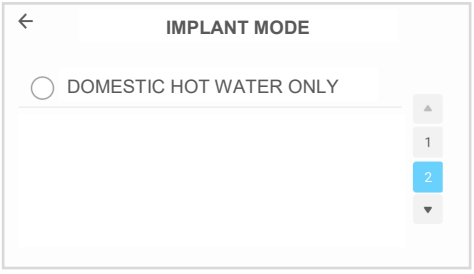


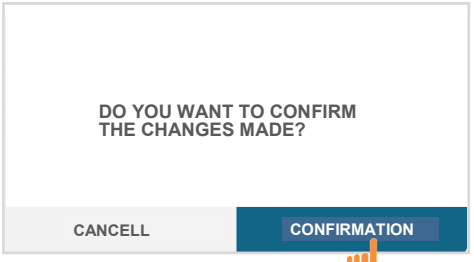
Press

Back

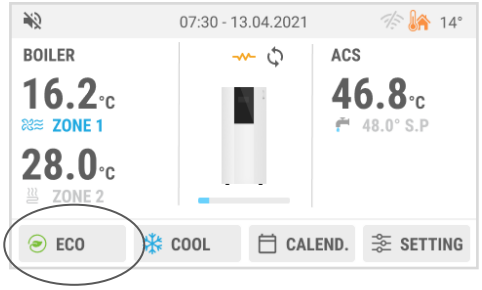


Select the control





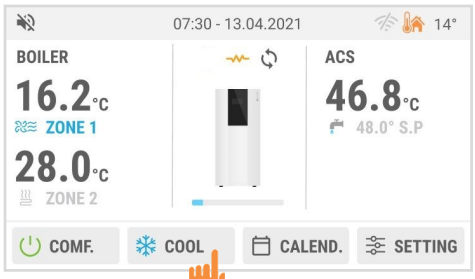
Press to save



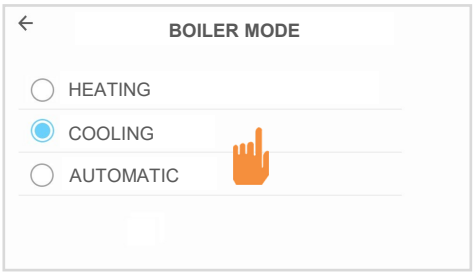
Mode

System mode

Selects the mode between Heating, Cooling and Automatic



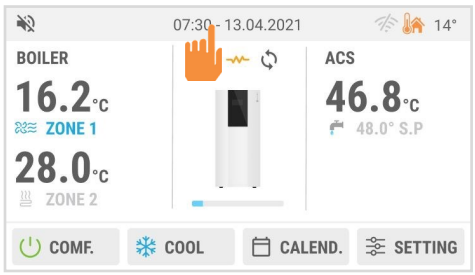
Press



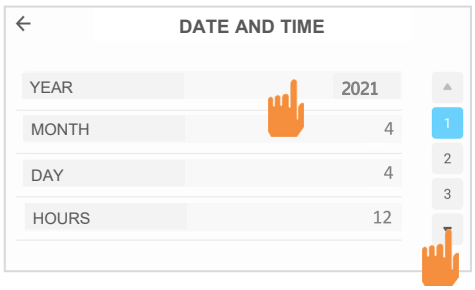
Press

Date and hour

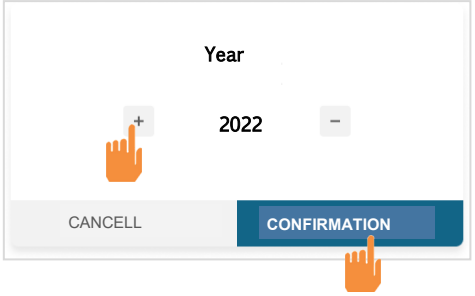
Sets the current date and time



Press



Press Year

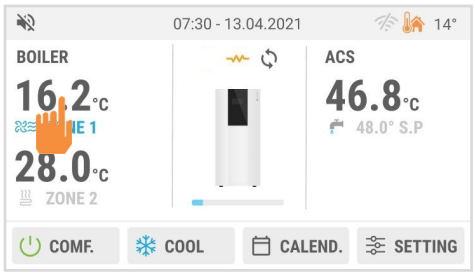


Press to save

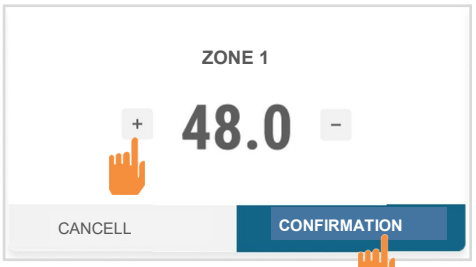
Repeat the same procedure for year, day, hour, minute

Heating/cooling temperature adjustment

Sets the system delivery temperature, Zone 1 and Zone 2

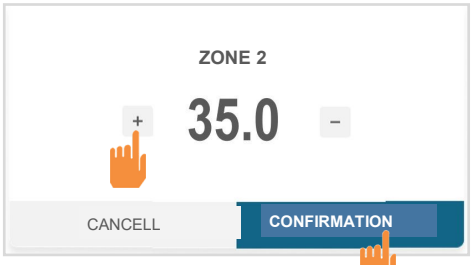


Press - Zone 1



Set temperature

Press to save



Set temperature

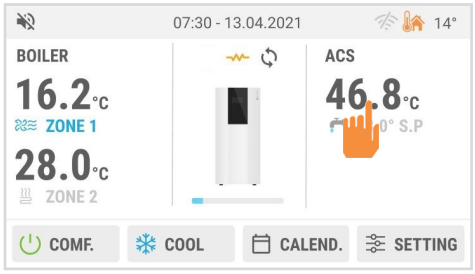
Press to save

DHW temperature adjustment

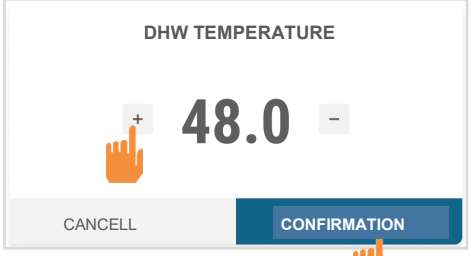
NOTE

⇒ *In the Box configuration, the temperature displayed is the current boiler temperature (instantaneous production).*

⇒ *In Tower configuration (box+storage tank) is the current storage tank temperature.*



Press



Set temperature

Press to save

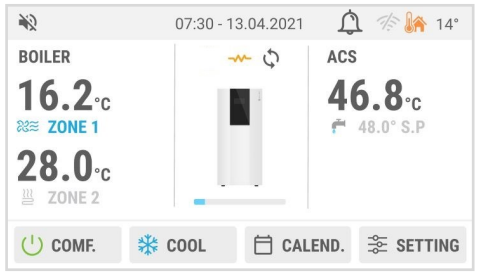
Alarms reset in progress

Before resetting an alarm identify and remove the cause that generate it

Repeated reset can cause irreversibile damages as malfunctioning of the system itself.

In case of doubt please contact an Assistance Centre.

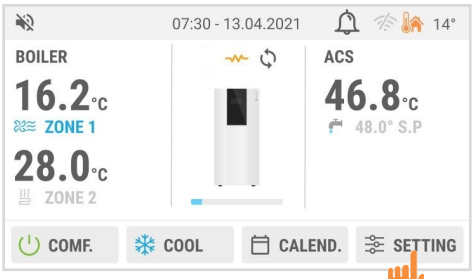
If the alarm remains, it is displayed



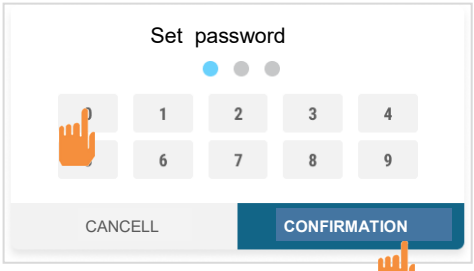
The pop-up appears

Press

Alarms reset (installer use)

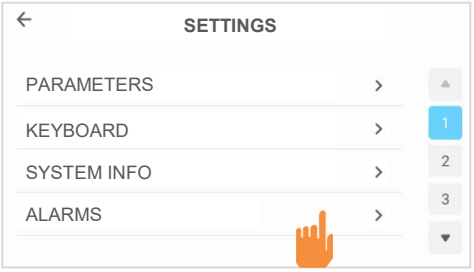


Press



Enter password

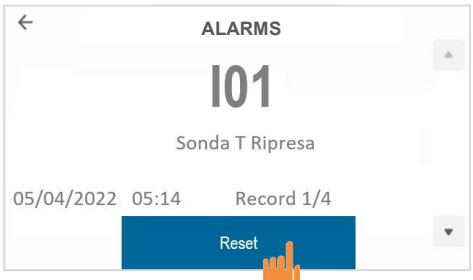
Confirm



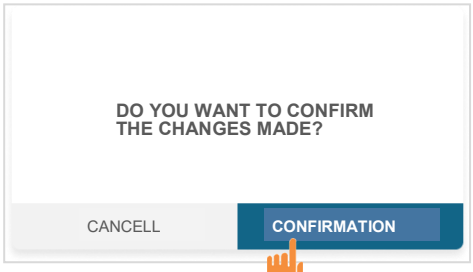
Press

Alarms log reset (installer use)

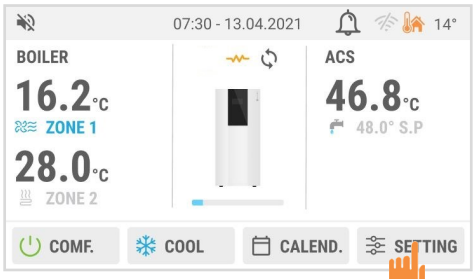
⇒ *This function deletes all the saved alarms*



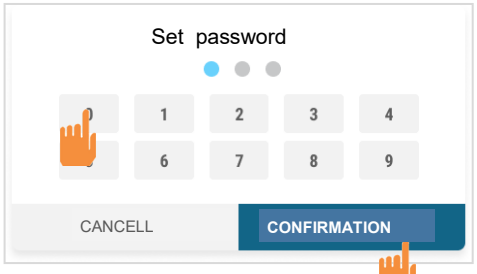
Press



Press



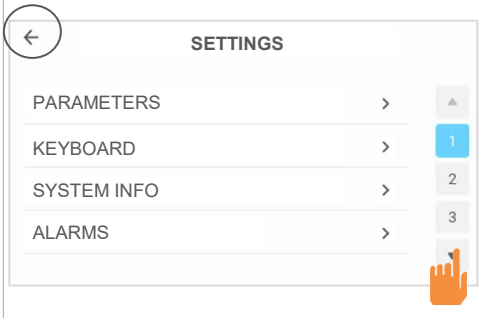
Press



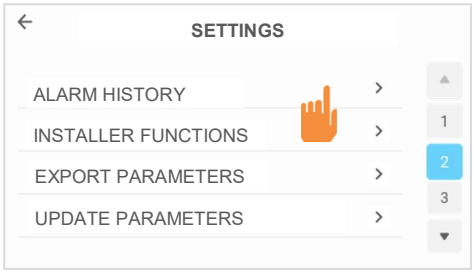
Enter password

Confirm

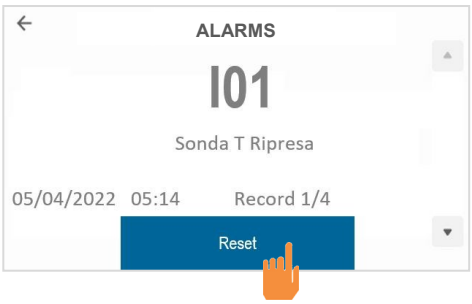
Back



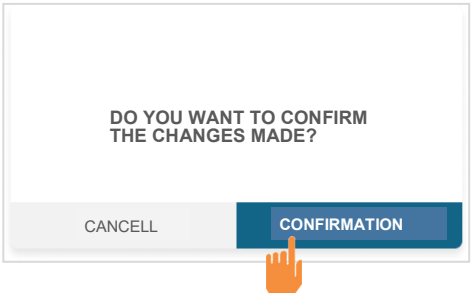
Press



Press



Press



Press

Back

Unit scheduling

It allows the user to customise the programs according to his/her own requirements (max. 3 programs), setting time bands and selecting from Comfort (Com), Economy (Eco) and Off (switched off).

Each program can be assigned to any day of the week, for example, Monday prog1, Tuesday prog2, etc..

Edit PRG.

Copy PRG.

New PRG.

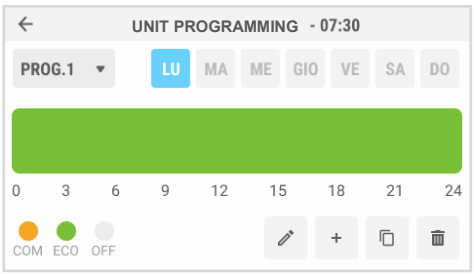
Delete PRG.

Example of program

Program OFF

No program, unit off

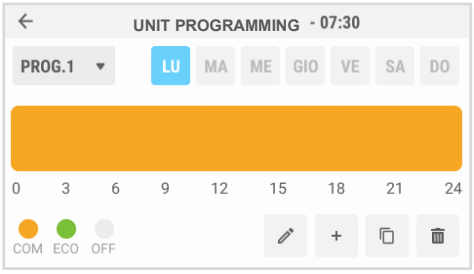
No DHW production



Example of program

Program economic

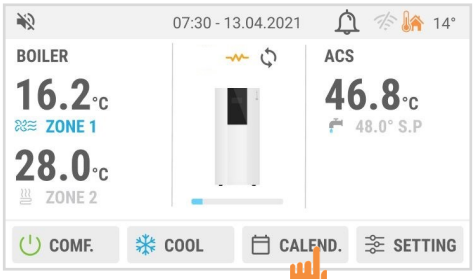
Program used to keep the water setpoint constant for lower energy consumption



Example of program

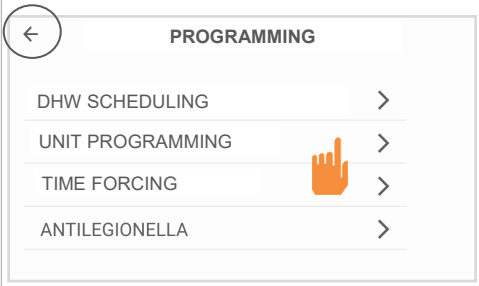
Program comfort

Program used to keep the water setpoint higher, for optimal ambient comfort

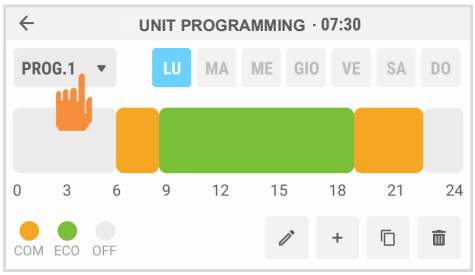


Press

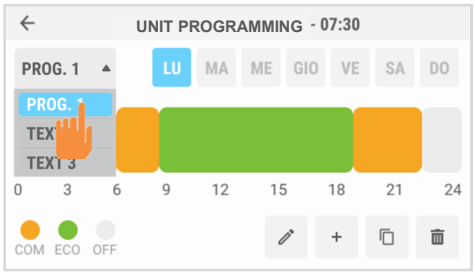
Back



Press - Unit programming

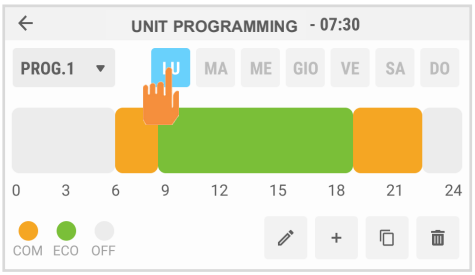


Press - Prog.1

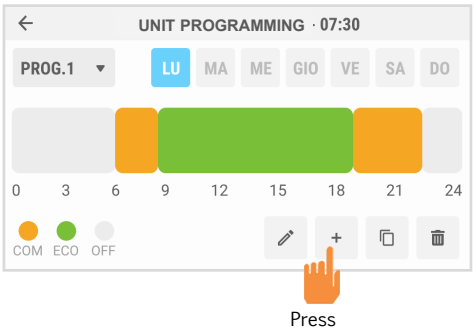


Select program

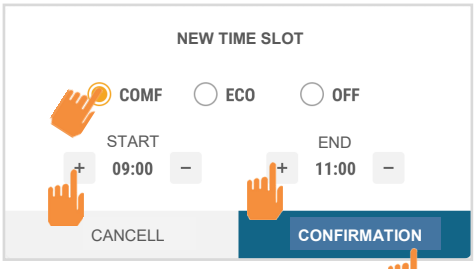
Press



Select day



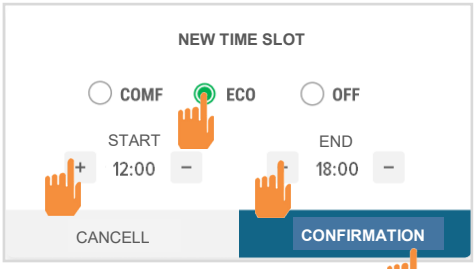
Press



Select Comf

Set start and end time

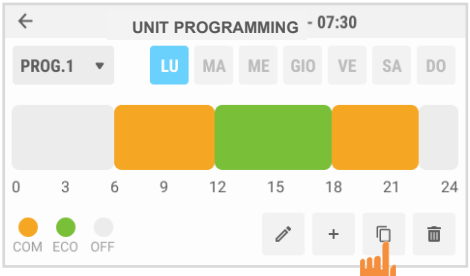
Press to save



Select Eco

Set start and end time

Press to save



Copy program

Press

Select days: Wednesday, Thursday

Press to save

Dhw scheduling

Edit PRG.

Copy PRG.

New PRG.

Delete PRG.

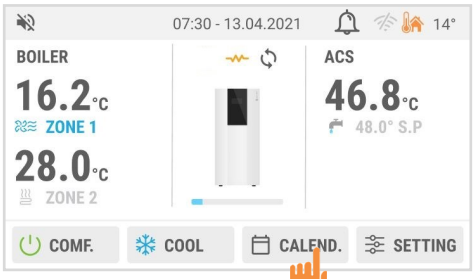
Selects 4 types of programming:

- Maintenance
- Storage
- Recirculation
- Storage + Recirculation

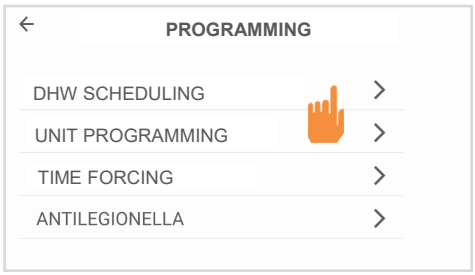
It is better to schedule the maintenance phase at night and during the periods of reduced use of domestic hot water.

Storage: use this mode during periods of greatest DHW demand.

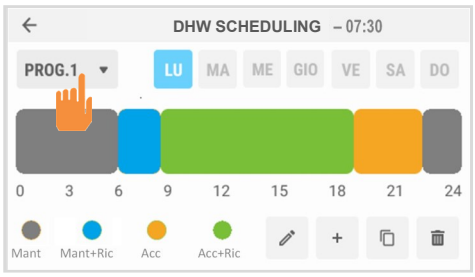
Recirculation: this mode ensures that hot water is quickly available when the tap is opened, thus reducing wastage.



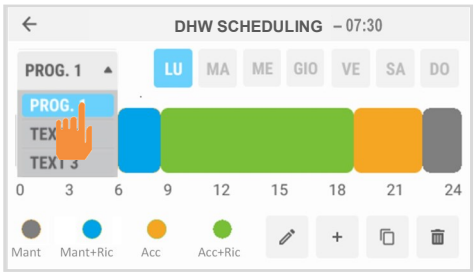
Press



Press - Sanitary programming

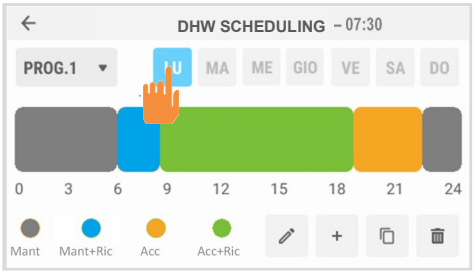


Press - Prog.1

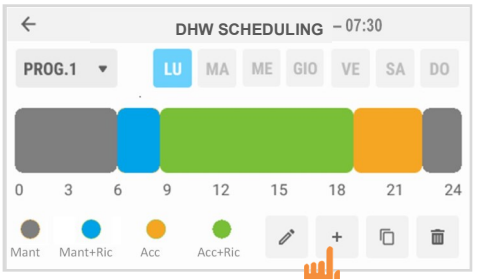


Select program

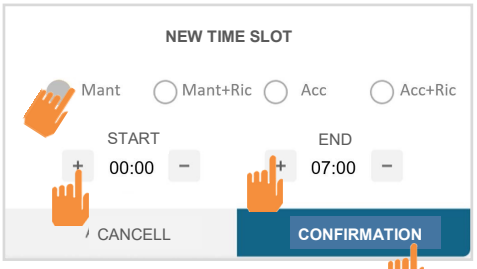
Press



Select day



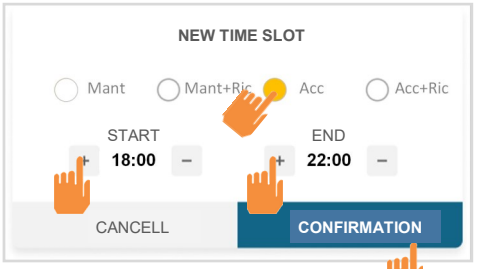
Press



Select Mant

Set start and end time

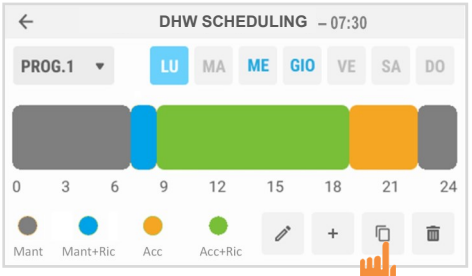
Press to save



Select Acc

Set start and end time

Press to save



Copy program

Press

Select days: Wednesday, Thursday

Press to save

Scheduling anti-legionella

Edit PRG.

Copy PRG.

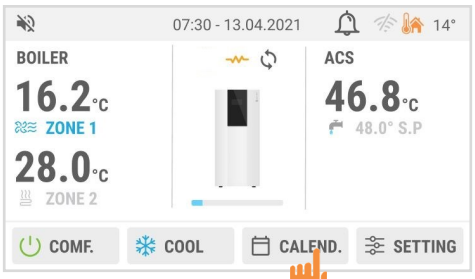
New PRG.

Delete PRG.

The anti-Legionnaire's disease cycle disinfects the DHW thermally.

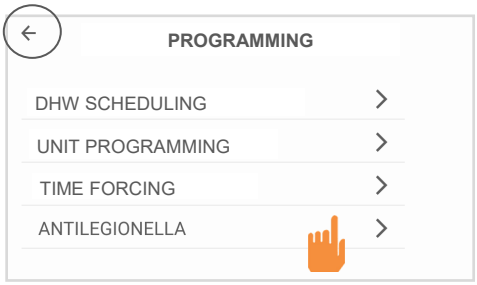
- The scheduling allows to set :
- Cadece:
  - Disabled
  - Weekly
  - Monthly
- Day
- Start hour

We recommend a weekly or monthly schedule.

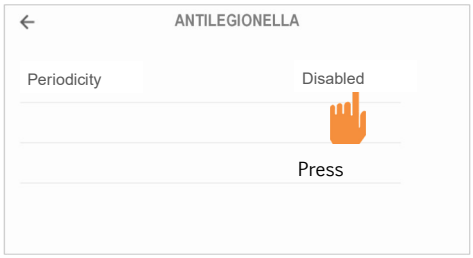


Back

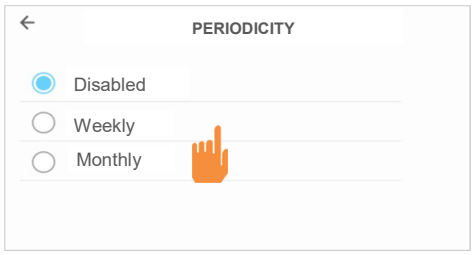
Press



Press - Anti-legionella

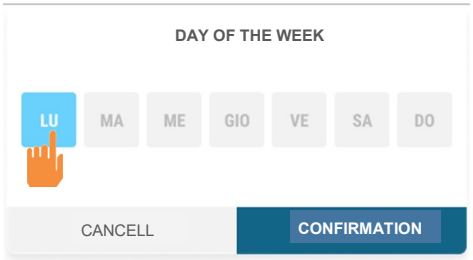


Press



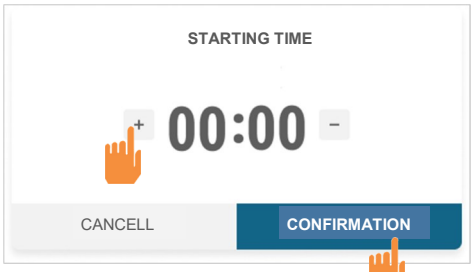
Select - Weekly

Set - Day and hour



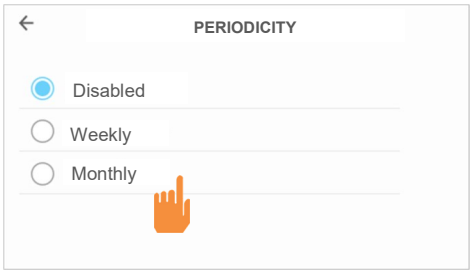
Select day

Monthly setting



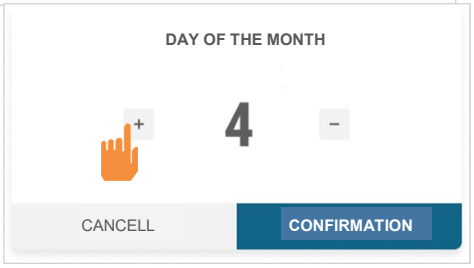
Press
Set start time

Press to save

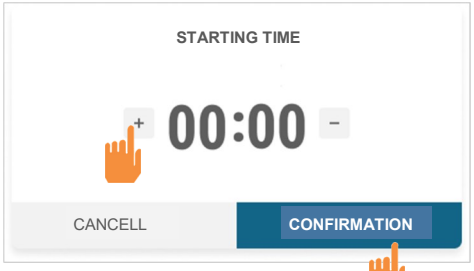


Select Monthly

Set - Day and hour



Select day

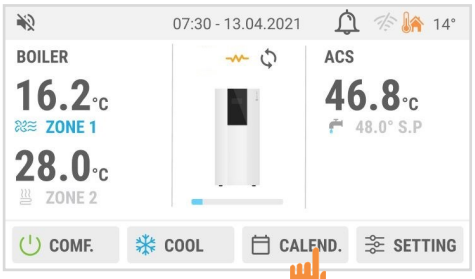


Press
Set start time

Press to save

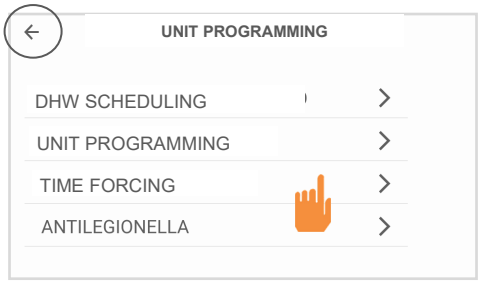
Timed forcing

The unit can be forced into a given mode (off - economy - comfort) for a certain time, regardless of the timer settings. When this time is over, the previous program resumes.

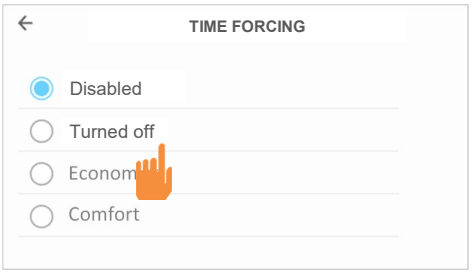


Press

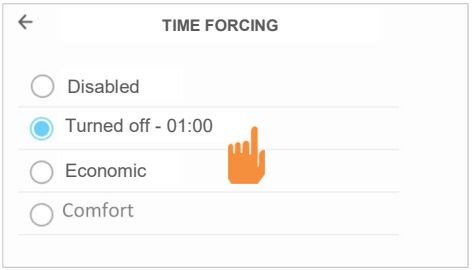
Back



Press - Timed forging

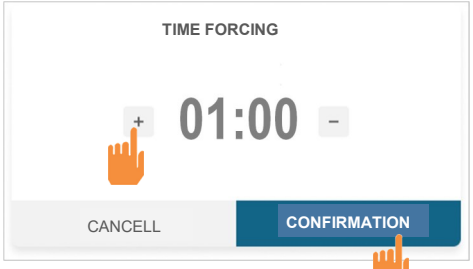


Press - Off



Monthly

Press - Off



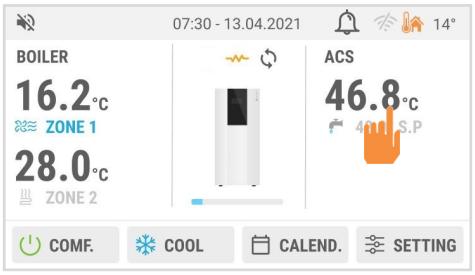
Press

Set end time

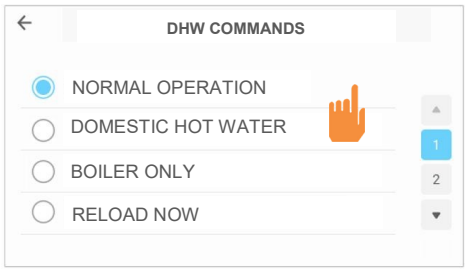
Press to save

DHW

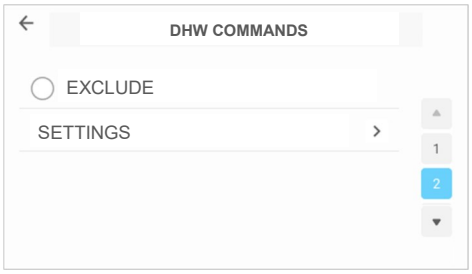
- Normal operation (operation dependent on DHW demand)
- DHW only (domestic hot water production only)
- Boiler only (heat pump excluded)
- Reload now (Boost) (Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint))
- Exclude



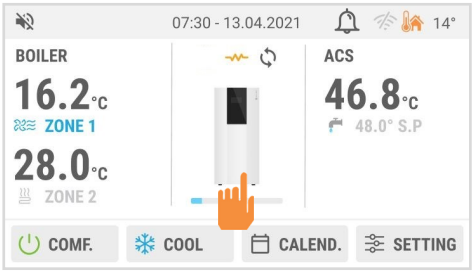
Press 5s.



Select the function



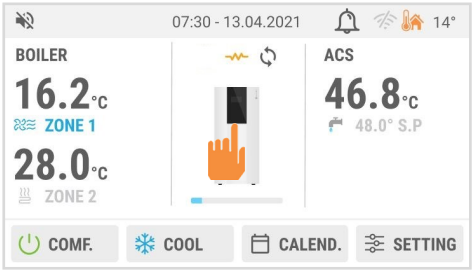
Unit stata (consultation only)



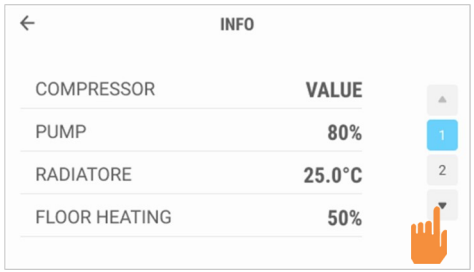
Press 5s.

Press

Unit info/system (consultation only)



Press



Press

Climatic curves (installer use)

The 2 climatic zones can be configured.

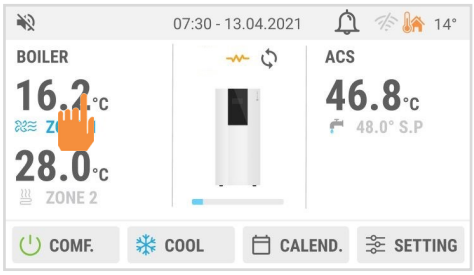
Supply water set point:

Fixed:

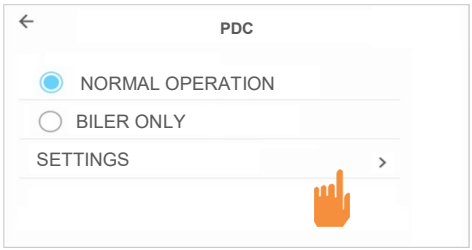
- no compensation is set on the outdoor temperature; the value can be set
- dew compensation remains active in the Summer

Compensated

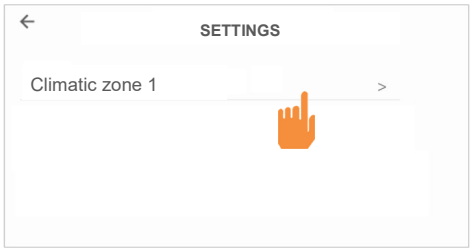
- varies according to the outdoor temperature



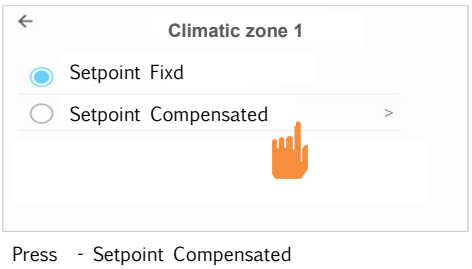
Press 5s.



Press - Setting

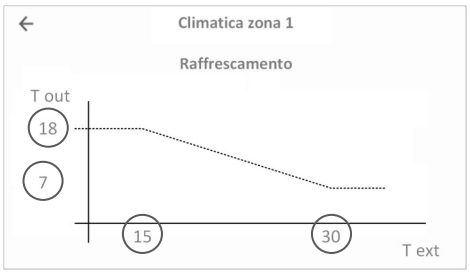


Press - Climatic

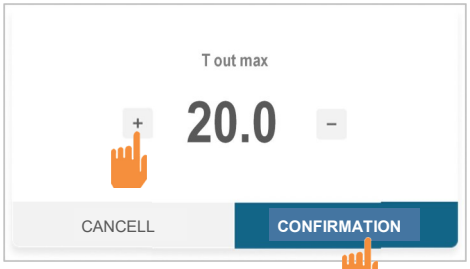


Press - Setpoint Compensated

Climate setting zone 1 (cooling)

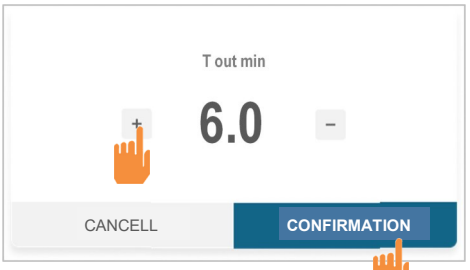


Press the numbers to change



Press

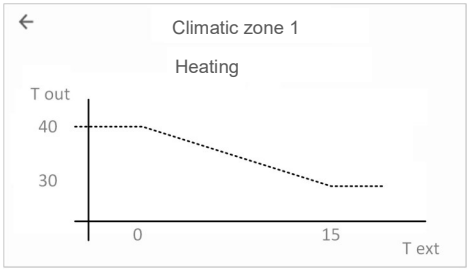
Press to save



Press

Press to save

Climate setting zone 1 (heating)

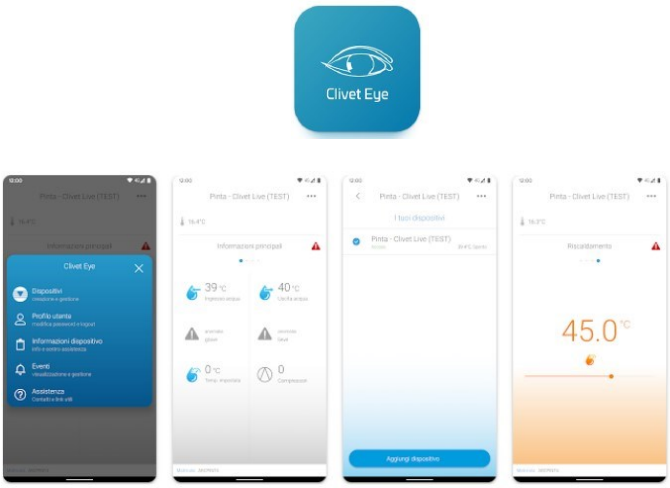


Same procedure for heating

Connection to the WiFi network

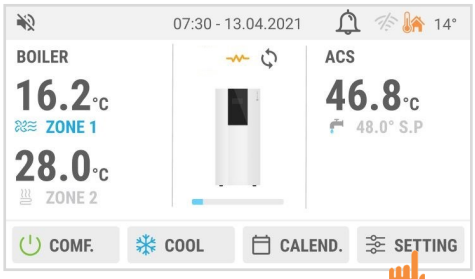
The units in the Sphera Evo 2.0 EASYHybrid series come equipped with a Wi-Fi connection, and when this is configured you can access the Cloud and communicate remotely with the unit.

Communication is via the Clivet Eye App, available for free download in the App Store and Google Play.



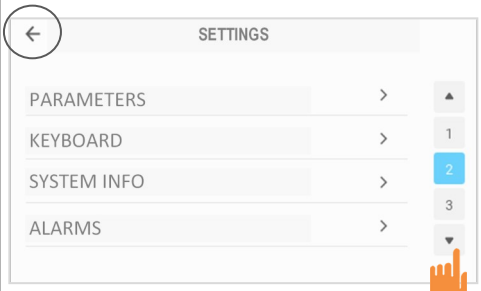
To set up the communication system for the unit, you need to follow these steps:

- Connection to the Wi-Fi network
- Connection to the Cloud
- Check the configuration via the Clivet Eye App

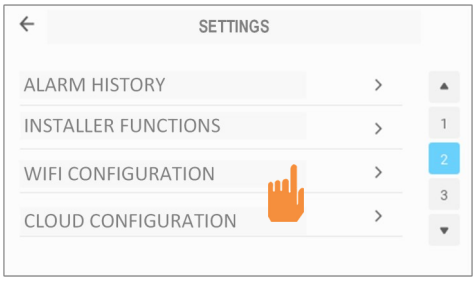


Press

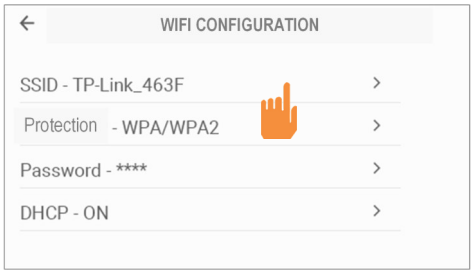
Back



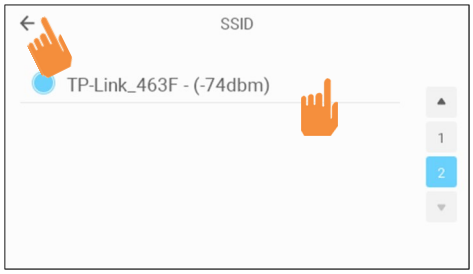
Press



Press WIFI



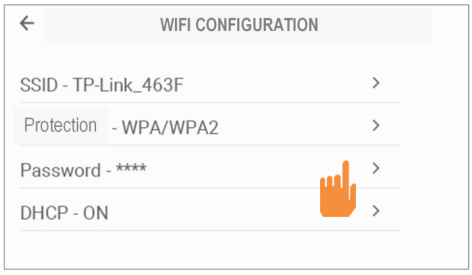
Press



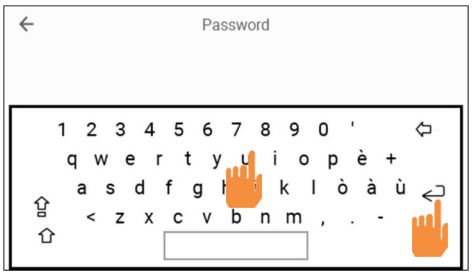
Select the WIFI network

Press back

Enter WIFI network protection password.

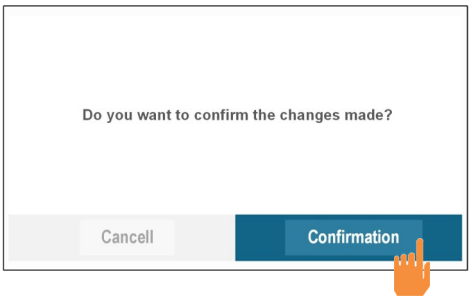


Press password



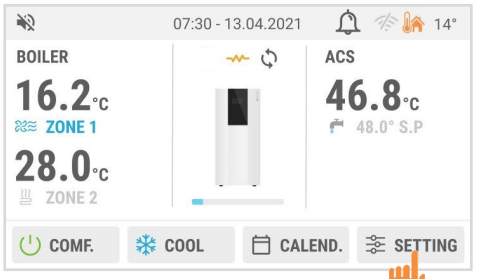
Enter PASSWORD

Press Enter



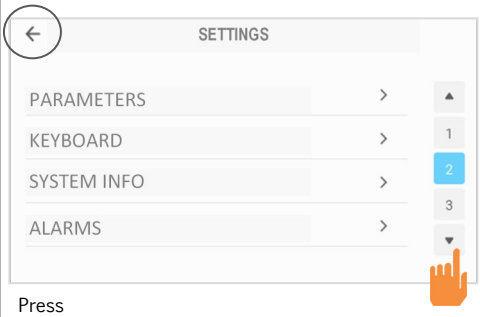
Press to save

Cloud connection

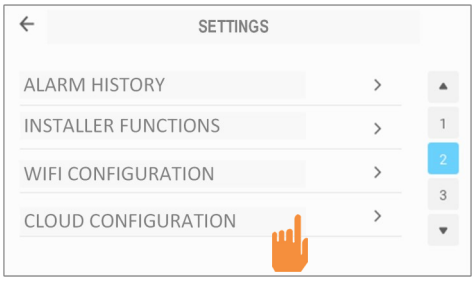


Press

Back

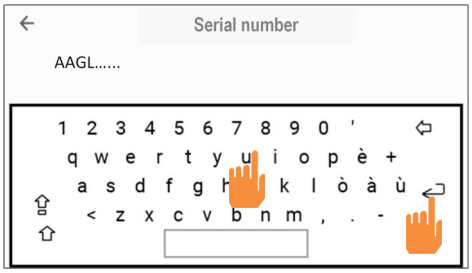


Press



Press CLOUD

Press Serial number

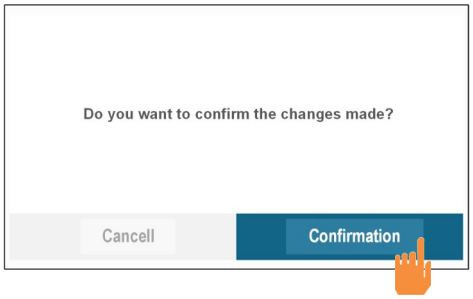


Enter unit serial number

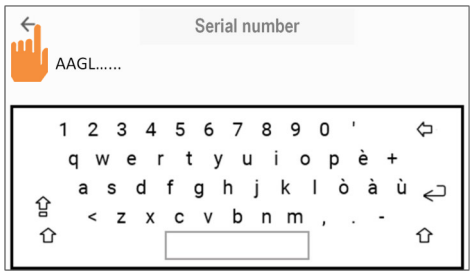
Press ENTER

Enter password.

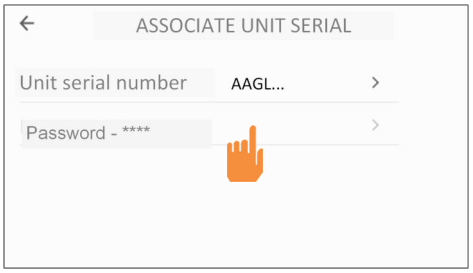
Define a password and associate it with the unit serial number to complete the association on the CLOUD.



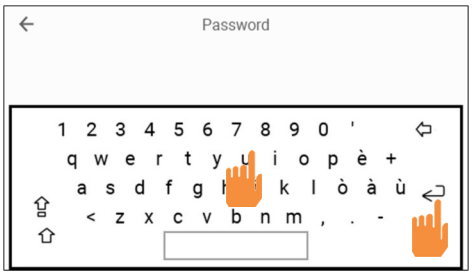
Press to save



Press Back

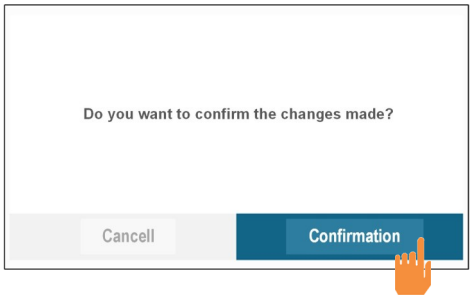


Premere password



Enter PASSWORD

Press Enter



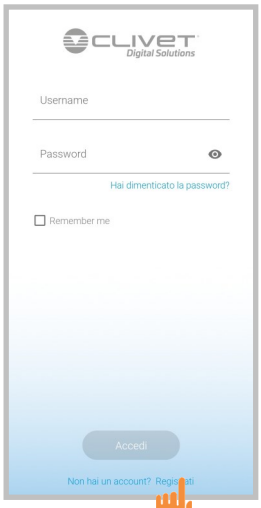
Press to save

Registering from your mobile device

Search for Clivet Eye in the APP STORE or GOOGLE PLAY to install the app.

Sign in/Sign up

Press to register the account.



Register

Sign up

Complete all the fields.

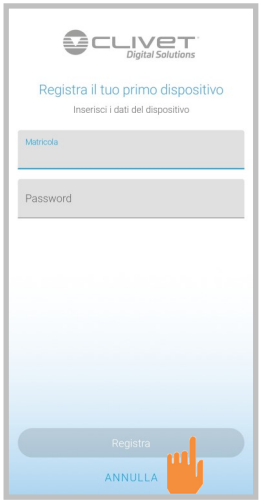
Continue

Connect the device

Connect the device to the particular user by entering the serial number and password.

The password is the one you set during connection to the Cloud (see Cloud Connection)

Once the procedure is completed, you can log in using these credentials.



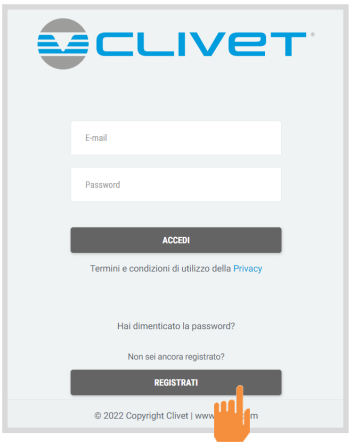
Register

Registering from PC

Access the web address **https://www.cliveteye.com**

Sign in/Sign up

Press to register the account.



Registrati

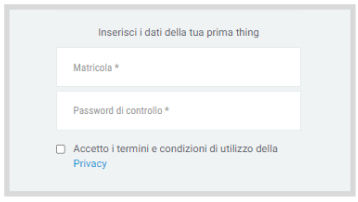
Sign up

Complete all the fields.

Connect the device

Connect the device to the particular user by entering the serial number and password.

The password is the one you set during connection to the Cloud (see Cloud Connection)

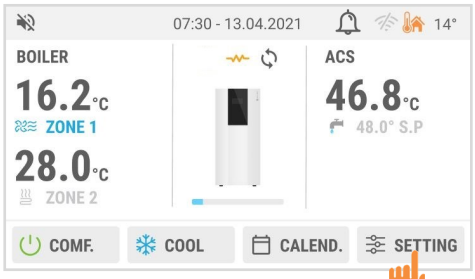


Once the procedure is completed, you can log in using these credentials.

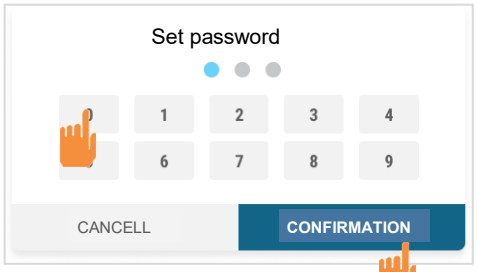
Accessing user parameters

The unit is set by the factory with default unit parameters to values that can satisfy the greater number of installation cases.
For a detailed customization of the system is however possible to make changes

For the list of parameters see the following pages.



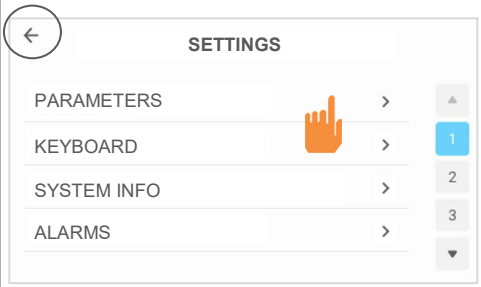
Press



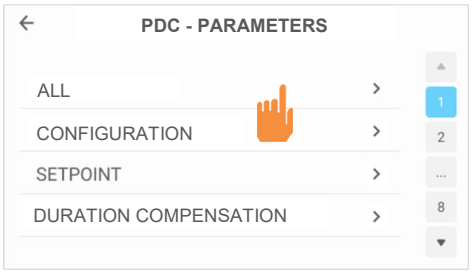
Enter password

Confirm

Back

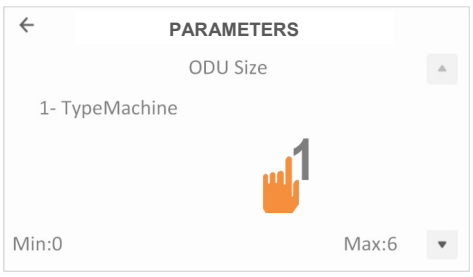


Press - Parameters

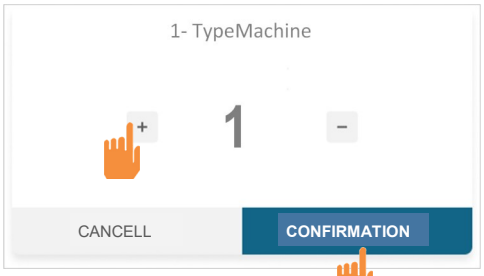


Press - All

Example



Press



Press

Insert value

Press to save

User parameters

The list includes the parameters accessibile to the user, according to the unit configuration some parameters are visible and some not.

Modbus Address	ID	Mnemonico	Extended description	Val Min	Val Max	Default	U.M.
1013	14	CompExt	External compensation enabling for out-door temp. 0=No 1=Cool 2=Heat 3=Always	0	3	0	Num
1017	18	MantCoolEn	Enable Summer maintenance	0	1	0	1=yes/0=No
1018	19	MantHeatEn	Enable Winter maintenance	0	1	0	1=yes/0=No
1034	35	SetCool	Summer setpoint	MinSetCool	MaxSetCool	7	°C
1035	36	SetHeat	Winter setpoint	MinSetHeat	MaxSetHeat	45	°C
1036	37	SecondSetC	Secondary summer setpoint	MinSetCool	MaxSetCool	12	°C
1037	38	SecondSetH	Secondary Winter Setpoint	MinSetHeat	MaxSetHeat	35	°C
1038	39	SetCoolC2	Circuit 2 Summer Setpoint	MinSetCool	MaxSetCool	7	°C
1039	40	SetHeatC2	Circuit 2 Winter Setpoint	MinSetHeat	MaxSetHeat	45	°C
1040	41	SecondSetC2	Circuit 2 secondary summer setpoint	MinSetCool	MaxSetCool	12	°C
1041	42	SecondSetH2	Circuit 2 Winter Secondary Setpoint	MinSetHeat	MaxSetHeat	35	°C
1063	64	SetAccumulo	Unit internal storage tank domestic hot water Setpoint	0	100	45	°C
1065	66	BandaMant	Maximum variation allowed inside during maintenance phase	0	100	6	°C
1068	69	EnAntilegio	Enable antilegionella	0	1	0	°C
1072	73	EnRicircolo	0=Not managed, 1=Enabled, 2=Enabled only in Heating, 3=Enabled only in Cooling	0	1	0	Flag
1130	131	CExtMaxC	Maximum out. Summer correction Temp.	-60	90	15	°C
1131	132	CExtMinC	Minimum out. Summer correction Temp.	-60	90	30	°C
1132	133	CExtMaxH	Maximum out. Winter correction Temp.	-60	90	15	°C
1133	134	CExtMinH	Minimum out. Winter correction Temp.	-60	90	0	°C
1134	135	MaxCExtC	Max. Summer correction value	0	25	8	°C
1135	136	MaxCExtH	Max. Winter correction value	0	25	10	°C
1140	141	CExtMaxC2	Secondary circuit 2 Maximum out. Summer correction Temp.	-60	90	15	°C
1141	142	CExtMinC2	Secondary circuit 2 Minimum out. Summer correction Temp.	-60	90	30	°C
1142	143	CExtMaxH2	Secondary circuit 2 Maximum out. Winter correction Temp.	-60	90	15	°C
1143	144	CExtMinH2	Secondary circuit 2 Minimum out. Winter correction Temp.	-60	90	0	°C
1144	145	MaxCExtC2	Secondary circuit 2 maximum summer correction value	0	25	8	°C
1145	146	MaxCExtH2	Secondary circuit 2 maximum winter cor-rection value	0	25	10	°C
1161	162	LimitePW	Power input limit	0	50	4,5	Kw
1174	175	LimitePWDI	Power input limit enabled from digital input	0	177_LimitePW	4,3	Kw
1201	202	SetMantCool	Summer Maintenance Set Point	-30	60	20	°C
1202	203	SetMantHeat	Winter Maintenance Set Point	-30	60	30	°C
1261	262	IstTAmb	Ambient temperature hysteresis	0	15	2	°C
1427	428	CompExtC2	External Temp. comp. enabling 0=No 1=Cool 2=Heat 3=Always	0	3	0	Num

Data subject to updates.

Allarms code

Alarm code	Address		Meaning
E00	3000	bit0	ALL_TIMEOUT_TAST_e00,
E01		bit1	ERR_SONDA_IN_E01
E02		bit2	ERR_SONDA_OUT_E02,
E03		bit3	ERR_SONDA_EXT_E03,
E04		bit4	ERR_SONDA_BATTERIA_E04,
E05		bit5	ERR_SONDA_T1_E05
E06		bit6	ERR_FLUSSIMETRO_E06
E08		bit7	ERR_SONDA_PRESS1_E08,
F01		bit8	ALL_HP1_CIRC1_F01,
F02		bit9	ALL_LP1_CIRC1_F02,
E26		bit10	ALL_TERMICA1_E26,
E23		bit11	ALL_TERMICO_VENTIL_CIRC1_E23,
I01		bit12	ALL_FLUSSO_POMPA_UT_I01,
I03		bit13	ALL_GELO_UT_I03,
I06		bit14	ALL_CARICO_I06,
I07		bit15	ALL_DELTA_T_INC_I07,
I09	3001	bit0	PREALL_ANTIGELO_i09,
I11		bit1	ALL_TIN_FUORI_NORM_i11,
I12		bit2	SCAMB_INS_SEC/PRIM (LATO ACS)_i12,
I13		bit3	ALL_GELO_AMBIENTE_I13,
E14		bit4	ALL_TIMEOUT_POTENZA_e14,
F10		bit5	ALL_MAX_TS_F10,
E15		bit6	ERR_SONDA_SOLARE_E15,
E16		bit7	ERR_SONDA_ACS_SUP_E16,
E18		bit8	ERR_SONDA_SCARICO_E18,
E19		bit9	ERR_SONDA_ASP_E19,
I15		bit10	ALL_CARICO_ACS_I15,
E33		bit11	ALL_TIMEOUT_IO_E33,
E34		bit12	ERR_SONDA_IN_C1_E34,
E35		bit13	ALL_TERMICO_POMPA_C1_E35,
E36		bit14	ERR_SONDA_IN_C2_E36,
E37		bit15	ERR_SONDA_OUT_C2_E37,
E38	3002	bit0	ALL_TERMICO_POMPA_C2_E38,
E32		bit1	ALLARME_INVERTER_E32
E46		bit2	ALL_CALDAIA_E46,
E47		bit3	ALL_TIMEOUT_IO_E47
I22		bit4	ALL_HT_IMPIANTO (I22)
E59		bit5	CONDENSER_OUTLET_HT_PROTECTION_E59
E60		bit6	ERR_ODU_POWER_SUPPLY_E60

F22	3002	bit7	FAN_SPEED_IN_A_AREA_10MIN_F22
E61		bit8	ERR_ODU_EEPROM_E61
E62		bit9	ALL_FAN_E62
F23		bit10	LP_PROTECTION_F23
E63		bit11	DC_GEN_VOLT_TOO_LOW_E63
I23		bit12	T4 OUT OF HIGH COOL LIMIT_I23
I24		bit13	T4 OUT OF HIGH DHW LIMIT_I24
I25		bit14	T4 OUT OF HIGH HEAT LIMIT_I25
I26		bit15	T4 OUT OF LOW COOL LIMIT_I26
I27	3003	bit0	T4 OUT OF LOW HEAT/DHW LIMIT_I27
E70		bit1	Mancata accensione del bruciatore
E71		bit2	Intervento protezione sovratemperatura
E72		bit3	Temperatura fumi elevata
E73		bit4	Anomalia pressostato acqua
E74		bit5	Anomalia sensore di mandata
E75		bit6	Anomalia sensore sanitario
E76		bit7	Pressione acqua impianto non corretta
E77		bit8	Errori specifici controllo combustione
E78		bit9	Anomalia sensore ritorno
E79		bit10	Anomalia ventilatore
E80		bit11	Intervento protezione scambiatore
E81		bit12	Troppi errori SW o errore comparso per sostituzione scheda
E82		bit13	Anomalia parametri scheda
E83		bit14	Errore richieste multiple
E84		bit15	Superamento numero massimo di Reset consecutivi
E85	3004	bit0	Segnale fiamma parassita
E86		bit1	Tensione di alimentazione inferiore a 180V
E87		bit2	Anomalia termostato limite con parametro b06 = 1 o 4
E88		bit3	Errore generico hardware o software della scheda elettronica
E89		bit4	Segnale fiamma presente con bruciatore spento
E90		bit5	Mancanza fiamma dopo fase di accensione
E91		bit6	Intervento sicurezza condotto evaquazione fumi
E92		bit7	Anomalia sonda esterna
E93		bit8	Frequenza di alimentazione sbagliata
E94		bit9	Richiesta calibrazione
E95		bit10	Anomalia sonda fumi

Description of alarms, see next page

Allarms

In case of maloperations the alarms are indicated by the 'Alarm in progress' symbol on the multifunctional keypad.

To view the alarms select Menu ▶ Setting

To reset the alarm remove its cause and reset the active alarm.

Before resetting an alarm identify and remove the cause that generate it.

Repeated reset can cause irreversibile damages as maloperation of the system itself.

In case of doubt please contact an Assistance Centre.

Visualisation of code on indoor unit keypad	Visualisation of code on moto-condensing unit board	Description	Possible cause	
e00	-	Base keypad disconnection	Keypad not communicating with unit	A
E01	-	Exchanger input temp. probe	faulty or disconnected sensor	A
E02	-	Exchanger output temp. probe	faulty or disconnected sensor	A
E03	E6	Outside temp. probe	The T4 sensor connector is loosening. Reconnect it. The T4 sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive The T4 sensor failure, change a new sensor.	A
E04	E5	Coil temperature probe(T3)	The T3 sensor connector is loosening. Reconnect it. The T3 sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive. The T3 sensor failure, change a new sensor.	A
E05	-	Auxiliary heater temperature probe	faulty or disconnected sensor	A
E06	-	Flowmeter	Flowmeter disconnected, wrongly wiring, or faulty	M
E08	H8	Pressure 1 probe (HP)	Pressure sensor connector disconnected. Re-connect it. Faulty pressure sensor. Replace the sensor	A
e14	H1	Communication error of the modular compressor inverter	Wrongly connected/disconnected wiring, or faulty board; replace board.	A/ M
E15	-	Solar temperature probe (17)	faulty or disconnected sensor	A
E16	-	DHW tank temperature probe (17)	faulty or disconnected sensor	A
E18	EA	Compressor discharge Temp. probe	faulty or disconnected sensor	A

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed

Visualisation of code on indoor unit keypad	Visualisation of code on moto-condensing unit board	Description	Possible cause	
E19	E9	Compressor return temperature probe (Th)	The Th sensor connector is loosening. Reconnect it. The Th sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive. The Th sensor failure, change a new sensor.	A
E23	H6	Fan thermal	Strong wind or typhoon below toward to the fan, to make the fan running in the opposite direction. Change the unit direction or make shelter to avoid typhoon below to the fan. Fan motor is broken, change a new fan motor.	A
E26	P3	Compressor thermal	The same reason to F1/P1. Power supply voltage of the unit is low, increase the power voltage to the required range	A
E32	P6	Inverter protection (IPDU and IR341)	Power supply voltage of the unit is low, increase the power voltage to the required range. The space between the units is too narrow for heat exchange. Increase the space between the units. Heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction. Fan is not running. Fan motor or fan is broken, Change a new fan or fan motor. Insufficient coolant load. Recharge the refrigerant in right volume. Water flow rate is low, there is air in system, or pump head is not enough. Release the air and reselect the pump. Water outlet temp sensor is loosening or broken, reconnect it or change a new one. Water tank heat exchanger is smaller than the required 1.7m^2 (10-16kW unit)or 1.4m^2 (5-7kW unit) Module wires or screws are loosening. Reconnect wires and screws. The Thermal Conductive Adhesive is dry or drop. Add some thermal conductive adhesive. The wire connection is loosening or drop. Reconnect the wire. Drive board is defective, replace a new one. If already confirm the control system has no problem, then compressor is defective, replace a new compressor.	A
E33	-	Communication failure of secondary management board	ANOMALY ON CAN CONNECTION disconnected wiring, DIP1 frame not correctly configured, lack of power supply to the I/O card (check T1 outlet and wiring), fuse 5F1	A
E34	-	Return temperature probe of	faulty or disconnected sensor	A
E35	-	Thermal pump of secondary C1	pump high absorption - air in the installation - defective wirings - faulty pump	A/M

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed

Visualisation of code on indoor unit keypad	Visualisation of code on moto-condensing unit board	Description	Possible cause	
E36	-	Return temperature probe of secondary C2	faulty or disconnected sensor	A
E37	-	Supply temperature probe of secondary C2	faulty or disconnected sensor	A
E38	-	Thermal pump of secondary C2	pump high absorption - air in the installation - defective wirings - faulty pump	A/M
E46	-	Boiler alarm	Boiler-to-unit communication error. Check boiler connections	M
E47	H0	Communication failure ODU Module	Wire doesn't connect between indoor unit and outdoor unit. Connect the wire. Communication wire sequence is not right. Reconnect the wire in the right sequence. Whether there is a high magnetic field or high power interfere, such as lifts, large power transformers, etc. To add a barrier to protect the unit or to move the unit to the other place.	A
E59	Pd	High Temperature protection of coil condenser (T3)	Energy exchanger coil dirty or obstructed Heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction. Fan is not running. Fan motor or fan is broken, Change a new fan or fan motor.	A
E60	H7	Power supply voltage malfunction	Whether the power supply input is in the available range. Power off and power on for several times rapidly in short time. Remain the unit power off for more than 3 minutes than power on. The circuit defect part of Main control board is defective. Replace a new Main PCB.	A
E61	HF	Outdoor chip EEPROM malfunction	The EEprom parameter is error, rewrite the EEprom data. EEprom chip part is broken. Change a new EEprom chip part. Main PCB is broken, change a new PCB.	A
E62	HH	Fan motor malfunction H6 happened 10 times in 120 minutes, manually reset by power off. (Need power refresh)	See E23/H6	A
E63	F1	DC generatrix voltage too lower (Main relay keep open)	If F1 appears when power on，check wiring of the unit. Check the communication between main board and driver board. Check if the PTC is hot or not，if it is hot，power off the unit and wait the temperature drop down and power on again. Check the DC generatrix voltage，if it is low，check the bridge rectifier and module board.	A

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed

Visualisation of code on indoor unit keypad	Visualisation of code on moto-condensing unit board	Description	Possible cause	
F01	P1	High pressure (HP)	Heating mode, DHW mode. The water flow is low; water temp is high, whether there is air in the water system. Release the air. Water pressure is lower than 0.1Mpa, charge the water to let the pressure in the range of 0.15~0.2Mpa. Excessive coolant load. Recharge the refrigerant in right volume. Electrical expansion valve locked or winding connector is loosening. Tap-tap the valve body and plug in/ plug off the connector for several times to make sure the valve is working correctly. And install the winding in the right location DHW mode: Water tank heat exchanger is smaller than the required 1.7m^2(10-16kW unit)or 1.4m^2(5-7kW unit) Cooling mode Energy exchanger coil dirty or obstructed. Heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction.	A
F02	P0	Low pressure (LP)	Insufficient coolant load. Charge refrigerant in right volume. When at heating mode or heat water mode, heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction. The water flow is low in cooling mode. Electrical expansion valve locked or winding connector loosens. Tap-tap the valve body and plug in/ plug off the connector for several times to make sure the valve is working correctly. And install the winding in the right location	A
F10	P4	Max. discharge temperature alarm	The same reason to F1/P1. Insufficient coolant load. Charge refrigerant in right volume. Twout temp sensor connector loosens. Reconnect it. T1 temp sensor connector loosens. Reconnect it. T5 temp sensor connector loosens. Reconnect it.	A
F22	HE	Fan speed in A area and last 10 minutes	The outside ambient Temp. is too high (higher than 30°C, the unit still operate heat mode. Close the heat mode when the ambient Temp. is higher than 30°C	A
F23	HP	Low pressure protection(less than 0.6MPa) happened 3 times in 1 hour	Check gas charge	A

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed

Visualisation of code on indoor unit keypad	Visualisation of code on moto-condensing unit board	Description	Possible cause	
I01	-	Utility pump flow	system not under pressure - air must be let out, dirty sludge remover, primary circulator stopped (mechanical error, burned fuse)	A/M
I03	-	Source pump flow	Absence of water flow source side. Check pump flow. Check pump operation. Verify flow switch activation.	M
I06	-	Discharged primary circuit	System load low pressure	M
I07	-	Delta of input/output primary exchanger temperature inconsistent to the operating mode	In SUMMER the outgoing temperature is higher than the incoming temperature; In WINTER the incoming temperature is lower than the outgoing temperature; Jammed refrigerating circuit inversion valve (check solenoid).	M
i09	-	Preallarme antigelo circuito primario	INVERNO sbrinamento in condizioni anomale (funzionamento fuori dai limiti) ESTATE : bassa portata e set point troppo basso	A
i11	-	Exchange input water temperature over the current operating mode limits	operation out of limits (Example: In SUMMER the system flow temperature is higher than 25 °C; In WINTER the flow temperature is lower than 20°C)	A
i12	-	DHW primary/secondary circuit insufficient exchange	low flow on the DHW exchanger. Dirty exchanger.	A
I15	-	Water charged DHW system (DHW)	sanitary water system with insufficient pressure	M
I22	-	System high temperature alarm	active supplementary heating element present heating element thermostat with contact open circulator pump stopped lack of water in the system	A/M
-	-/E1	Phase sequence fault (only for 3 Ph unit)	Check the power supply cables to avoid phase loss. Check the power supply cables sequence; change any two cables sequence of the three power supply.	A
-	-/H4	3 times E32/P6 protect	See E32/P6	A
-	-/HL	PFC module failure	The PFC module is broken, change a new PFC module.	A
I23	-	high outdoor temperature in cooling mode	Stopped compressor / Wait for temperature dropping	A
I24	-	high outdoor temperatur in DHW mode	Stopped compressor / Wait for temperature dropping	A
I25	-	high outdoor temperature in Heating mode	Stopped compressor / Wait for temperature dropping	A
I26	-	low outdoor temperature in cooling mode	Compressor stopped / Wait for temperature rising	A
I27	-	LOW outdoor temperature in heating / DHW mode	Compressor stopped / Wait for temperature rising	A

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed

Visualisation of code on indoor unit keypad	Visualisation of code on boiler	Description	Possible cause
E70	A01	No burner ignition	• No gas • Ignition/detection electrode fault • Insufficient gas supply pressure • Trap blocked • Air/fume ducts obstructed • Wrong calibration • Faulty gas valve
E71	A08/F09	Overtemperature protection intervention	• Sensor not correctly positioned on flow pipe or damaged • No water circulation in the system • Air in the system
E72	A07- F15	High fume temperature	• The fume probe detects an excessive temperature
E73	A23/A24/ A26/F20/ F21 /F40/ F47/ F51	Water pressure switch fault	• Wrongly configured parameter • System pressure problems (transducer) • b06 set to 3
E74	F10	Flow sensor fault	• Sensor damaged • Wiring shorted • Wiring disconnected
E75	F12	DHW sensor fault	• Sensor damaged • Wiring shorted • Wiring disconnected
E76	F37	Incorrect system water pressure	• Pressure too low • Water pressure switch damaged or disconnected
E77	A65 - A97 - F65 - F98	Specific combustion control errors	• Fume ducts obstructed. • Low gas pressure. • Condensate trap blocked. • Fumes recirculation or combustion problem
E78	F11	Return sensor fault	• Sensor damaged • Wiring shorted • Wiring disconnected
E79	F05	Fan fault	• No 230V power supply • Tachometric signal interrupted • Fan damaged
E80	A09	Exchanger protection activation	• No water circulation in the system • Poor circulation and anomalous flow probe temperature increase • blocked exchanger
E81	A98	Too many SW errors or error occurred during board replacement	• Board Replacement • Fume ducts obstructed. • Low gas pressure. • Condensate trap blocked. • Fumes recirculation or combustion problem.
E82	F19	Card parameter fault	• Wrong card parameter setting

Visualisation of code on indoor unit keypad	Visualisation of code on boiler	Description	Possible cause
E83	A44	Multiple requests error	• Repeated short-term requests
E84	A64	Maximum number of consecutive Resets exceeded	• Maximum number of consecutive Resets exceeded
E85	A80	Parasite flame signal	• Electrode problem. • Electronic board problem.
E86	F34	Supply voltage under 180V	• Electric mains trouble
E87	F50 - F53	Limit thermostat fault with parameter b06 = 1 or 4	• No/poor water circulation in the system • Air in the system • Incorrect parameter
E88	A99	Generic error	• Electronic board hardware or software error
E89	A02	Flame present signal with burner off	• Electrode fault • Card fault
E90	A06	No flame after the ignition phase	• Ionization electrode fault • Flame unstable • air/fume ducts obstructed • Trap blocked • Wrong calibration
E91	A14	Fume extraction duct safety device intervention	• Fault A07 generated 3 times in the last 24 hours
E92	F39	External probe fault	• Probe damaged or wiring shorted • Probe disconnected after activating the sliding temperature
E93	F35	Wrong supply frequency	• Electric mains trouble
E94	F62	Calibration required	• New card or boiler not yet calibrated
E95	F13	Fume probe fault	• Probe damaged • Wiring shorted • Wiring disconnected

Password-protected unit parameters (installer use)

The unit is set by the factory with default unit parameters to values that can satisfy the greater number of installation cases.

For a detailed customization of the system is however possible to make changes; the following is a list of all unit parameters, with all the available settings.

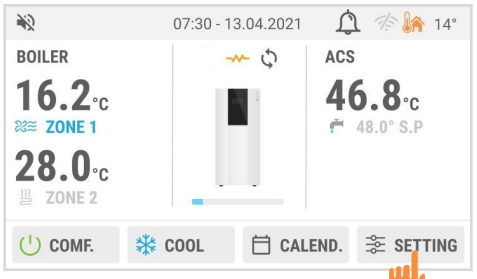
According to the unit configuration some parameters are visible and some not.

ATTENTION

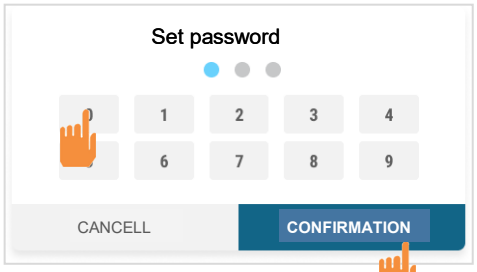
The access to parameters or modifications are allowed only to the qualified serviceman who assumes all responsibility, in case of doubts please contact Clivet.

For any changes not permitted or not approved by Clivet, the same declines any responsibility for malfunctions and/or damages to the unit/system and to people.

Password for installer use only: 115



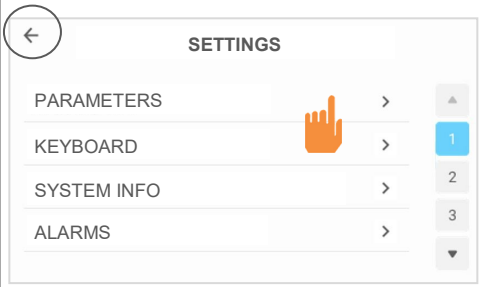
Press



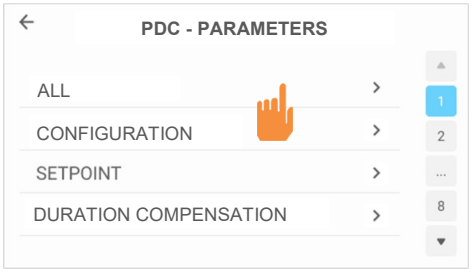
Enter password

Confermare

Back

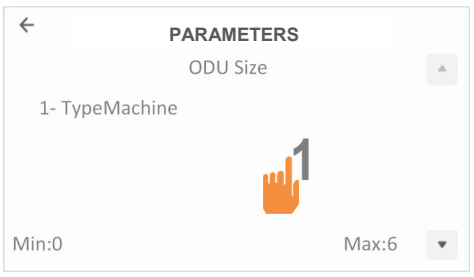


Press - Parametres

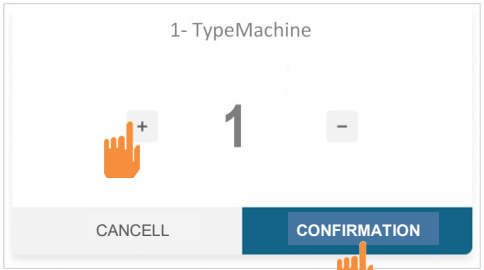


Press - All

Example



Press



Press

Insert value

Press to save

Password-protected unit parameters (installer use)

Modbus Address	ID	Mnemonico	Extended description	Val Min	Val Max	Default	U.M.
1000	1	TypeMachine	Type unit 0 = not configured 1 = Sphera BOX Easy Hybrid 2 = Sphera Tower Easy Hybrid 3 = Sphera Invisible 4 = Sphera Tower 5= Sphera Box 6= Edge 7 = Big Edge	0	10	0	Num
1002	3	EnH2OSan	Enable DHW function 0=Internal DHW Disabled, Only AHS Instant DHW 1= DHW+ Heating/Cooling, 2= DHW+ only Heating, 3=DHW+ only Cooling,	0	5	1	Num
1003	4	CaldaiaEn	Enable Gas boiler +HP 0= Gas boiler disabled, 1= Enabled gas boiler	0	2	0	Num
1004	5	EnPAux	Backup heater enabling 0=Not enabled, 1=Enabled, 2= Enabled (does not intervene due to DHW compressor failure)	0	2	0	Num
1005	6	EnCircuiti	Secondary configuration 0=1 AT; 1=1 AT + Breaker 2=2 AT; 2=1 AT+1 MISC;	0	9	0	Num
1006	7	ControlMode	Enable automatic temperature control	0	1	0	Num
1007	8	EnCascade	Enabling of cascade function between units	0	1	0	Num
1008	9	Config-DI1	F-DI1 digital input configuration 0 = disabled input 1 = Remote ON-OFF input 2 = Remote Mode Change (H/C) Input 3 = remote system call input 4 = second remote system setpoint 5 = Power limitation to PWDI Limit from digital input (NEW) 6 = DHW on Storage Tank threshold from digital input (NEW) 7 = DHW Heater Activation from I-DI1 up to SetHotH2O (photovoltaic function) 8 = Mode Change (H/C) Input from exclusive digital input (closed = HEAT open = COOL)	0	6	1	Num
1009	10	Config-DI2	F-DI1 digital input configuration 0 = disabled input 1 = Remote ON-OFF input 2 = Remote Mode Change (H/C) Input 3 = remote system call input 4 = second remote system setpoint 5 = Power limitation to PWDI Limit from digital input (NEW) 6 = DHW on Storage Tank threshold from digital input (NEW) 7 = DHW Heater Activation from I-DI1 up to SetHotH2O (photovoltaic function) (SPHERA release 04/2018) 8 = Mode Change (H/C) Input from exclusive digital input (closed = HEAT open = COOL)	0	6	0	Num
1012	13	EnCCar	Load compensation enabling 0=No 1=Cool 2=Heat 3=always	0	3	0	Num

Data subject to updates.

1014	15	CompDutyEn	Enable duty cycle compensation 0=No 1=Cool 2=Heat 3=Always	0	3	**0**	Num
1015	16	CompOnEn	Enable duration compensation 0=none 1=cooling only 2= heating only 3=Always	0	3	**3**	Num
1021	22	ControlPump	Enable utility pump shut-off: 0=Not enabled (always on) 1=according to the ambient call (from electromechanical thermostat or Hid-H1) 2=according to the system storage temperature	0	2	**1**	Num
1022	23	EnPowerLimit	Power Limit Enabling	0	1	**0**	1=Si/ 0=No
1023	24	EnAntiRug	Enable anti-dew compensation (No probe, probe present in the event of a remote keypad)	0	1	**0**	1=Si/ 0=No
1024	25	EnControlHC	Enable automatic variation of mode change	0	1	**0**	1=Si/ 0=No
1050	51	SanHeatMode	Management for forced production of DHW with system thermoregulation in heating mode satisfied 0=No 1=Yes 2=Yes internal storage tank	0	2	**2**	Num
1052	53	CompExtH2OS	Comp. enabling for External Temp. of the DHW setpoint	0	1	**0**	1=Si/ 0=No
1053	54	MaxCompH2OS	Maximum correction value outdoor T for domestic hot water setpoint	0	25	**10**	°C
1058	59	EnSolare	0=not enabled, 1=enabled on DHW, 2=enabled on DHW and system	0	4	**0**	Flag
1066	67	BandaAcc	Maximum variation allowed inside storage tank during accumulation phase	0	100	**3**	°C
1067	68	SetBoost	DHW setpoint in boost mode operation	55	80	**55**	°C
1069	70	SetAntilegio	Anti-legionella set point	50	70	**65**	°C
1073	74	TempoRicOn	Pump On time during recirculation cycle	0	60	**10**	Min
1074	75	TempoRicOff	Pump Off time during recirculation cycle	0	180	**45**	Min
1075	76	StartRic	Recirculation start time	0	24	**6**	Ore
1076	77	StopRic	Recirculation stop time	0	24	**23**	Ore
1078	79	CextMaxS	Maximum outdoor DHW compensation temperature in summer mode	-60	90	**30**	°C
1079	80	CextMinS	Minimum outdoor DHW compensation temperature in summer mode	-60	30	**15**	°C
1087	88	LowTForceR	Storage temperature below which the DHW heaters are activated	0	60	**5**	°C
1088	89	PWHeaterACS	DHW heater electric power	0	10	**2**	kW
1100	101	Address	Unit address on supervision ModBus serial	0	127	**2**	Ind.
1101	102	BaudRate	Supervision serial Baud Rate 0=4800 1=9600 2=19200	0	2	**1**	Flag
1102	103	Parity	Supervision serial Parity 0=NO 1=Odd 2=Even	0	2	**0**	Flag

Data subject to updates.

1106	107	TimeOutRete	Supervisor Modbus network timeout	1	600	**60**	Sec.
1170	171	LimI	Current limit	10	50	**18**	A
1172	173	ODUPowerLim	ODU absorption limit (0 no limitation; 1-8 limitation)	0	8	**0**	Num
1210	211	NMachine	Number of units connected in Mini-network	2	6	**3**	Num
1211	212	NumSleep	No. of units in standby for rotation	0	5	**0**	Num
1212	213	ControlAlarm	Enable units in alarm exclusion	0	1	**0**	Flag
1213	214	OffsetMS	Offset between machine Setpoints	0	20	**0**	°C
1214	215	TimeOut	Polling wait time from master	0	32000	**60**	Sec.
1215	216	TimeWork	Wear update time	0	1000	**24**	Ore
1216	217	TimeAlarm	Alarm duration before standby	0	32000	**300**	Sec.
1217	218	TimeUnitMS	Switch-on delay of 1st power step of each unit in mini-network	0	9999	**600**	Sec.
1218	219	OffsetMSFNC	Offset between machine Setpoints in Mini-network with FNC = on	0	20	**0**	°C
1219	220	FNCSleepMode	Enabling to (only) do FNC when the unit is in Sleep mode	NO	SI	**NO**	Flag
1220	221	ACSSleepMode	Enabling to (only) do DHW when the unit is in Sleep mode	NO	SI	**NO**	Flag
1221	222	DelayDfr	Waiting for new defrost enabling after the last defrosting by a unit in mini-network	0	32000	**300**	Sec.
1276	277	PWRes	Power input of additional heaters	0	10	**2**	kW
1290	291	SogliaExtC	External temperature threshold below which the boiler is enabled	-30	90	**-20**	°C
1291	292	IsteresiExt	External temperature hysteresis for PDC reactivation	0	25	**1**	°C
1292	293	TBypassAlm	Transition time for alarm from PDC to boiler	0	250	**30**	Min
1301	302	EnSwitchPDC	Switch enabling between PDC and Boiler depending on COP	0	1	**0**	Num
1302	303	CaldaiaOEM	0= Clivet configuration boiler 1= Boiler Radiant configuration	0	1	**0**	Num
1312	313	TLimiteCool	Inp water temp below which the activation of the comps in COOL is allowed	-30	90	**25**	°C
1313	314	TLimiteHeat	Inp water temp above which the activation of the comps in HEAT is allowed	-30	90	**20**	°C
1362	363	ManualVcc	Compressor control voltage set manually	0	10	**5**	Volt
1363	364	EnManualVcc	Manual compressor control enabling 0=automatic control 1= manual control With Poweroff-PowerOn the parameter goes back to the default value (0 = automatic control)	0	1	**0**	Num
1390	391	TypeTerm	Type of terminal connected (considering the most used one) 0=radiant panels 1=Fancoil 2=Radiator	0	2	**0**	Num
1391	392	EnClimatica	Operation with climatic function active or not 0= fixed point operation 1= operation with climatic function	0	1	**0**	Num
1392	393	CostoGas	Fuel cost in €/m3	0	5	**0,85**	€/m^3
1393	394	CostoEle	Cost of electrical power in €/kWh	0	5	**0,2**	€/ kWh
1402	403	DlyPumpSec	Pump switch-off delay after no call/circuit off	0	32000	**30**	Sec.

Data subject to updates.

1403	404	TimeLimTemp	Maximum time for secondary temperature above or below maximum range	1	120	**5**	Min
1408	409	MaxH2O-HeatC1	Maximum supply temperature in circuit 1 HEAT	0	100	**60**	°C
1409	410	MinH2OCoolC1	Minimum supply temperature in circuit 1 COOL	0	100	**5**	°C
1410	411	DeltaPumpC1	Circuit 1 nominal temperature differential	0	50	**5**	°C
1411	412	BandaD-PumpC1	Band centred for DeltaTPump1	0,5	10	**2**	°C
1412	413	MaxSignPumC1	Circulator 1 maximum control signal	0	100	**80**	%
1413	414	MinSignPumC1	Circulator 1 minimum control signal	0	100	**20**	%
1414	415	ModoUtilizC1	Circuit 1 seasonal enabling 1 = only COOL, 2 = only HEAT, 3 = Always	0	3	**3**	Num
1415	416	ChiamataUtC1	Configure ambient call on circuit 1 0= FROM digital input, 1=Remotely (Thermostat) 2= Both	0	2	**0**	Num
1425	426	ModoUtilizC2	Circuit 2 seasonal enabling 1 = only COOL, 2 = only HEAT, 3 = Always	0	3	**3**	Num
1426	427	EnAntirugC2	Enable circuit 2 anti-dew compensation	0	1	**0**	1=Si/ 0=No
1428	429	MaxH2O-HeatC2	Maximum supply temperature in circuit 2 HEAT	0	100	**60**	°C
1429	430	MinH2OCoolC2	Minimum supply temperature in circuit 2 COOL	0	100	**5**	°C
1430	431	DeltaPumpC2	Circuit 2 nominal temperature differential	0	50	**5**	°C
1431	432	BandaD-PumpC2	Band centred for DeltaTPump2	0,5	10	**2**	°C
1432	433	MaxSignPumC2	Circulator 2 maximum control signal	0	100	**80**	%
1433	434	MinSignPumC2	Minimum circulator 2 control signal	0	100	**20**	%
1434	435	ChiamataUtC2	Configure ambient call on circuit 2 0= FROM digital input, 1=Remotely (Thermostat/ModBus Keypad) 2= Both	0	2	**0**	Num

Data subject to updates.

Stata

Keyboard order	Mnemonico	Description	U.M.
1	Set Point	Current primary setpoint	°C
2	T ripresa	Exchanger input water temperature	°C
3	T mandata	Exchanger output water temperature	°C
4	T ausiliario	Backup heater output water temperature	°C
5	Setpoint ACS	DHW storage tank high probe temperature	°C
6	T ACS	DHW storage tank low probe temperature	°C
7	T solare	Solar collector temperature	°C
8	R ausiliario	Backup heater	0=Off 1=On
9	T esterna	Ambient temperature	°C
10	Comp Modulante	Variable speed compressor	rps
11	Pompa utilizzo	Utility pump	%
12	Comando caldaia	Boiler/integrated boiler control	0=Off 1=On
13	Portata H2O impianto	System side water flow rate	l/min
14	T batteria	Circuit condensation coil temperature	°C
15	T aspirazione	Intake temperature	°C
16	T scarico	Drain temperature	°C
17	Termostatica	Valve opening percentage	%
18	Fan Speed	Circuit 1 source flow rate	0-15
19	Pressure 1	Circuit 1 condensation pressure	Bar
20	Pressure 2	Circuit 1 evaporation pressure	Bar
21	Set point C1	Secondary circuit 1 current setpoint	°C
22	T mandata C1	Secondary circuit 1 supply temperature	°C
23	T ripresa C1	Secondary circuit 1 return temperature	°C
24	Pompa C1	Secondary circulator 1 control signal	0=Off 1=On
25	Set point C2	Secondary circuit 2 current setpoint	°C
26	T mandata C2	Secondary circuit 2 supply temperature	°C
27	T ripresa C2	Secondary circuit 2 return temperature	°C
28	Pompa C2	Secondary circulator 2 control signal	0=Off 1=On
29	Valvola C2	Secondary circuit 2 valve opening percentage (100 = fully open)	%
30	Set caldaia Impianto	Boiler valves control/boiler modulation	%
31	Set caldaia ACS	Boiler valves control/boiler modulation	%
32	Ore Comp	Compressor 1 operating hours	hour
33	Spunti Comp	Compressor 1 start-ups	Number
34	Salto gradino	Current step value (including compensations)	°C
35	T. inserimento	Dynamic TimeScan relating to insertion of resources	Seconds
36	Corr T esterna	External T compensation	°C
37	Corr T ambiente	Ambient T compensation	°C
38	Offset carico	Load compensation	°C
39	Comp Duty Cycle	Duty Cycle compensation	°C
40	Comp Durata	Duration compensation	°C

41	Potenza termica	Heating capacity delivery	KW
42	PW assorbita ODU	Electrical power absorbed	KW
43	Corrente ODU	ODU current	0-500 A
44	Tensione ODU	ODU voltage	0-400 Vrms
45	Driver Module protection code	Inverter protection	Bitmap
46	ODU limited frequency code	Frequency limitation code	Number
47	Minirete	Status of connection modules in cascade	X=disconnected node O=Connected node

Updating the keypad (installer use)

⇒ *Access reserved for technical assistance personnel during start-up and subsequent interventions.*

Certain USB pen drive brands may not be detected.

Materials required for the update:

- PC with the files required for the update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

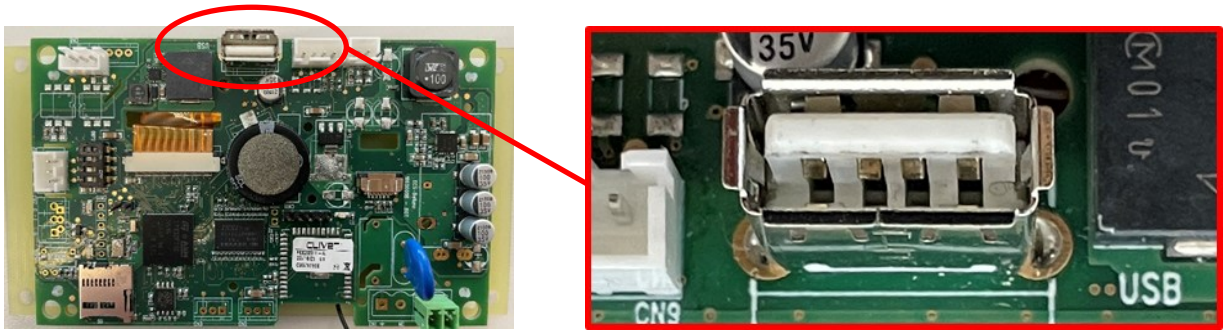
Copy to the ROOT of the USB pen drive the file:

Vxxxxxxx.bin

Vxxxxxxx.md5

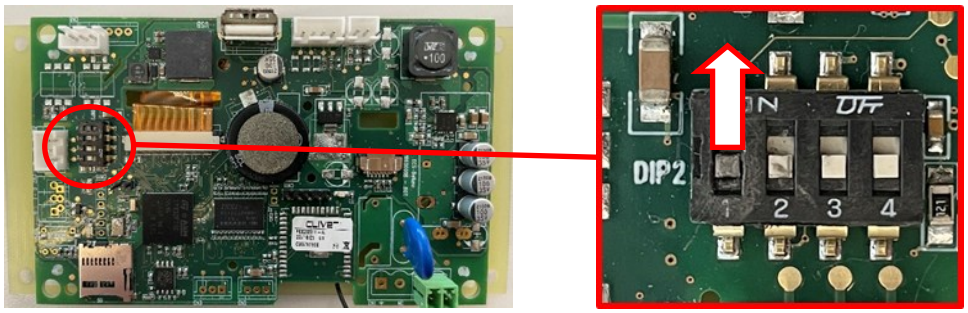
- If the unit is powered and running, the OFF mode operation must be set from the ON/OFF menu, and once the unit is off (0% on the display) disconnect it from the power supply.

With the unit disconnected, connect the USB pen drive to the USB port of the keypad (on the rear of the keypad).



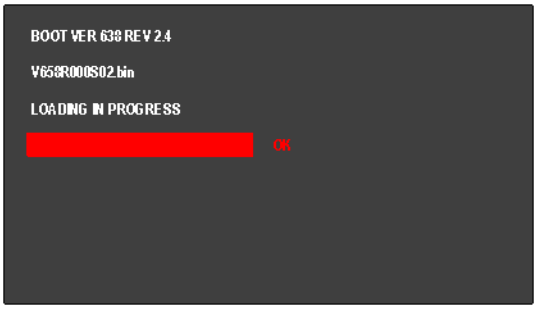
Set switch 1 of bank DIP2 to On.

Power on the unit.



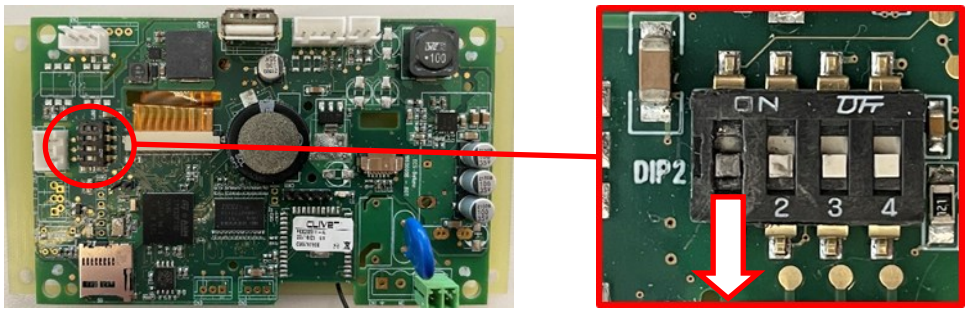
The keypad is powered on, follow the instructions on the display

1



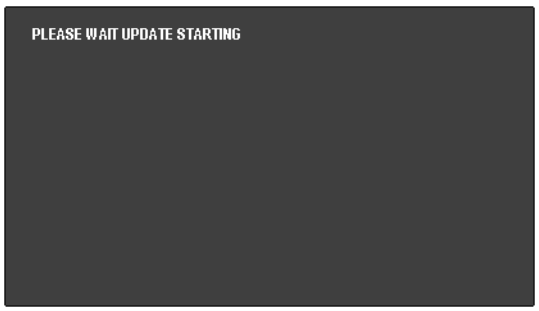
2

Reposition switch 1 to OFF without removing the power supply

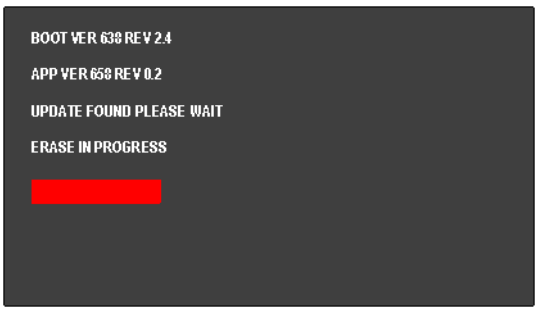


Continue with procedure on display

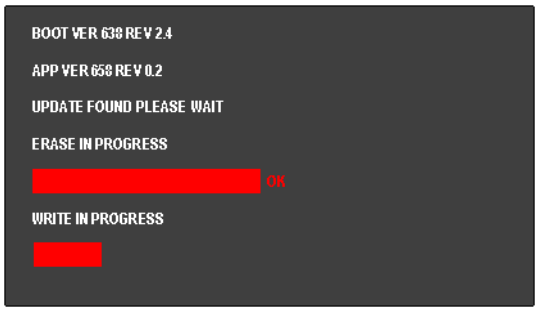
3



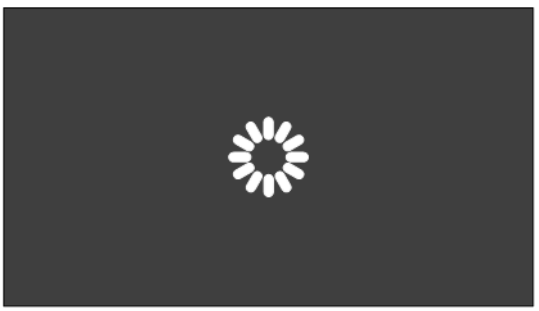
4



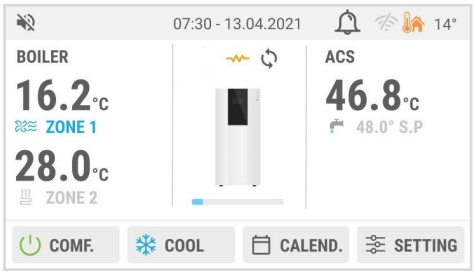
4



5



After the update has been completed, the keypad will display the main menu



⇒ *IF THE WORDING DOES NOT APPEAR, DISCONNECT THE POWER SUPPLY TO THE UNIT ONCE AGAIN, CHECK THAT THE PEN DRIVE IS PROPERLY INSERTED AND THAT THE FILE IS PRESENT IN THE ROOT, THEN REPEAT THE OPERATION.*

The update process terminates when the main window reappears.

At this stage, disconnect the unit from the power supply, remove the USB pen drive and power the unit again.

Languages update (installer use)

⇒ *Access reserved for technical assistance personnel during start-up and subsequent interventions.*

Certain USB pen drive brands may not be detected.

Materiale necessari per l'aggiornamento:

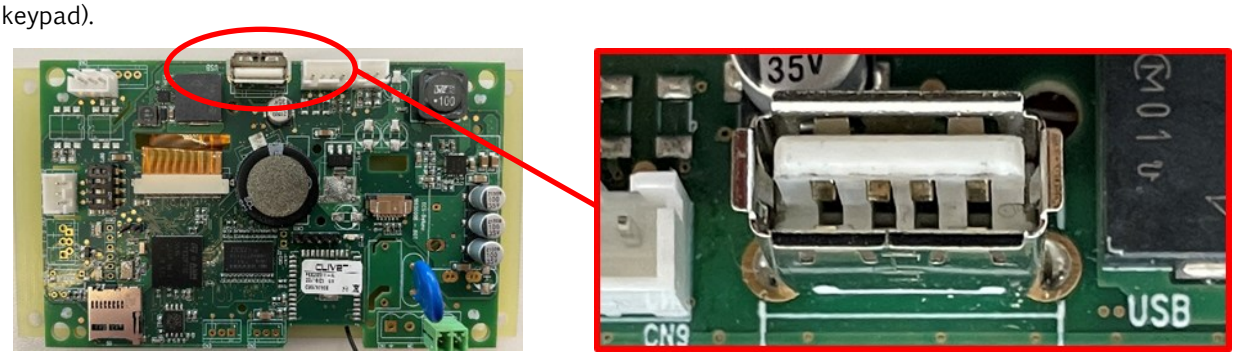
- PC with the files required for the update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

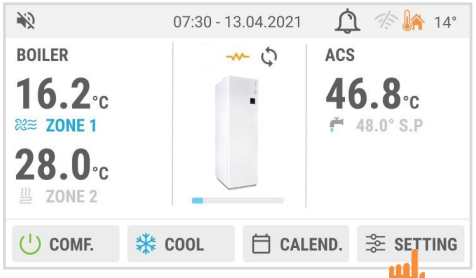
Copy to the ROOT of the USB pen drive the file:

Languages_xxxxx

With the unit disconnected, connect the USB pen drive to the USB port of the keypad (on the rear of the keypad).

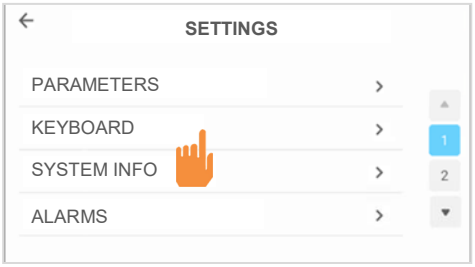


1



Press

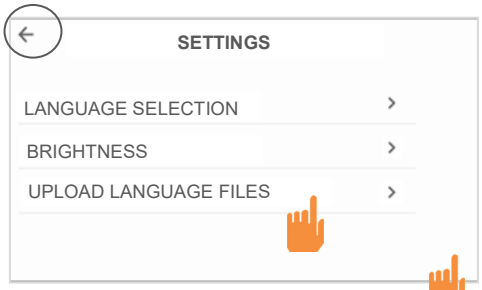
2



Press Keyboard

Back

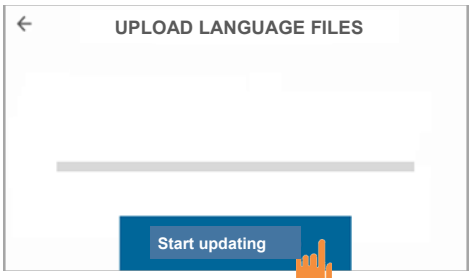
3



Press: Upload language file

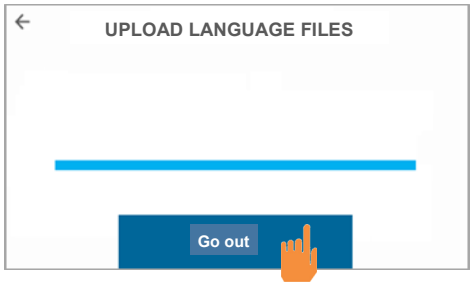
Press

4



Press - Start

5

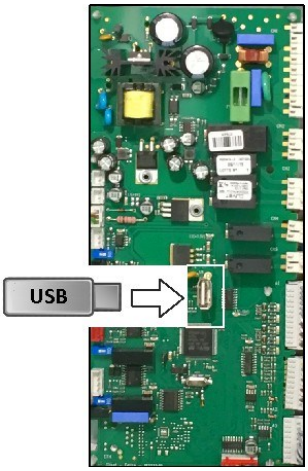


Press

Hydro board firmware update (installer use)

Certain USB pen drive brands may not be detected.

⇒ *Access reserved for technical assistance personnel during start-up and subsequent interventions.*



Materials required for the update:

- PC with the files required for the **V421RXXX** update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

Add the following two files to the ROOT of the USB pen drive:

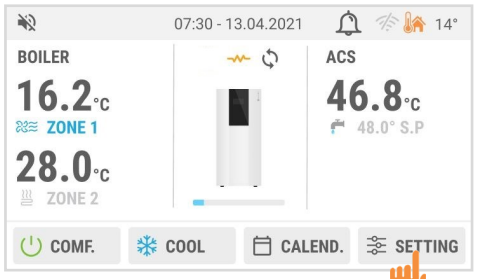
- **Vxxxxxxx.s19**
- **Vxxxxxxx.md5**

With the unit powered and in OFF mode, connect the USB pen drive to the USB port of the refrigeration board (moto-condensing unit).

Wait roughly 60 seconds for the file to be read and loaded then perform the procedure illustrated below..If the '**Update firmware**' option does not appear in the **Setting menu** wait a few minutes more or try disconnecting and reconnecting the USB pen drive to the board.

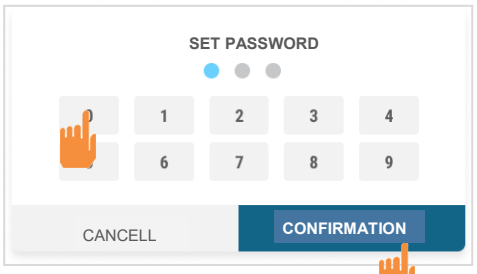
Check that the update files are PRESENT in the root.

1



Press

2

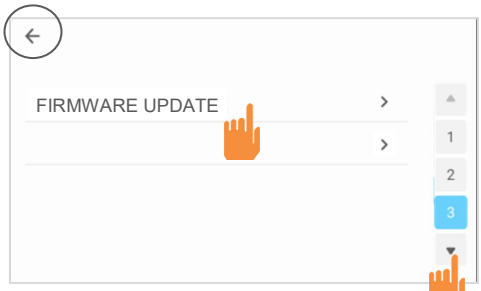


Enter password

Confirm

Back

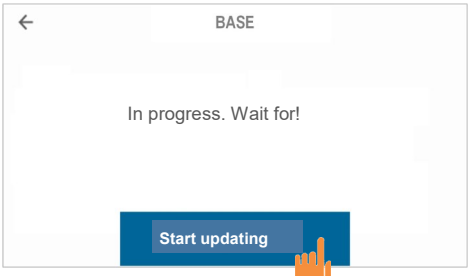
3



Press update firmware

Press

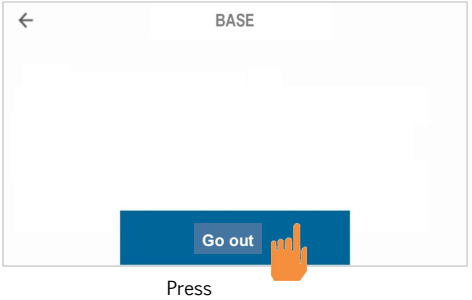
4



Press - Start

5

6



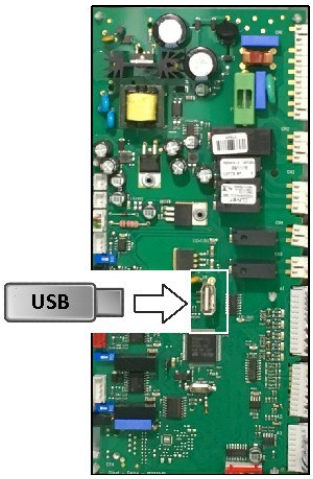
Press

At the end of the update procedure, check that the firmware version has been installed correctly by entering the **Setting** info from the **Info system** menu

Refrigeration board parametres update (installer use)

Certain USB pen drive brands may not be detected.

⇒ *Access reserved for technical assistance personnel during start-up and subsequent interventions.*



Material required for the update:

- PC with the pari.csv file required for the update process
- USB pen drive (empty)

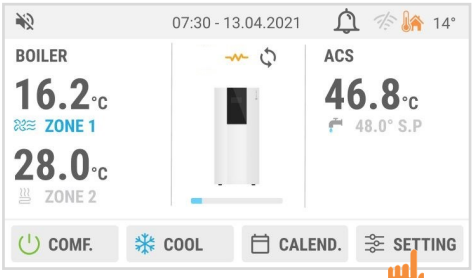
After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

Copy in the root of the USB pen drive the file of the parameters related to the Serial number of the internal unit

⇒ *NB: The parameters must be downloaded from the portal through the serial number of the internal unit*

With the unit powered and in **OFF mode**, connect the pen drive to the USB port of the hydro board

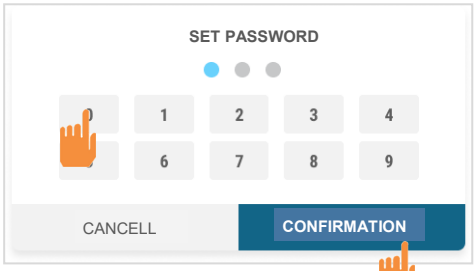
1



Press

Back

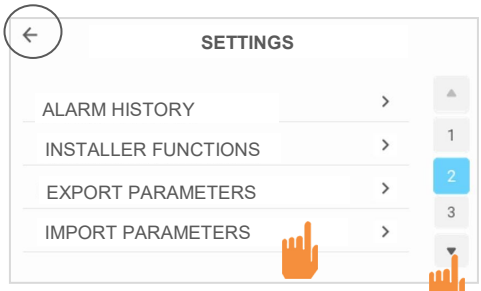
2



Enter password

Confirm

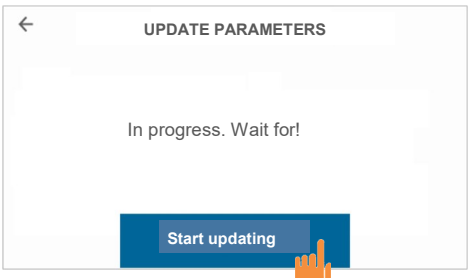
3



Press update parameters

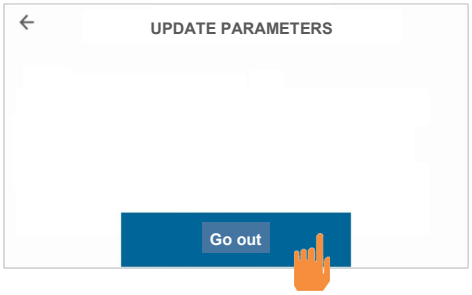
Press

4



Press - Start

5



Press

Export parameters (installer use)

Certain USB pen drive brands may not be detected.

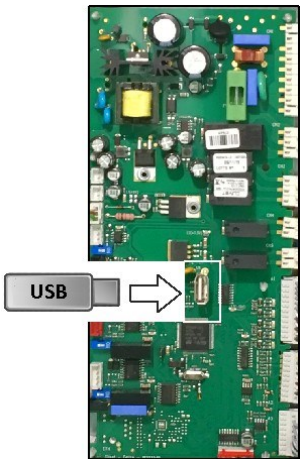
⇒ *Access reserved for technical assistance personnel during start-up and subsequent interventions.*

Material required for the update:

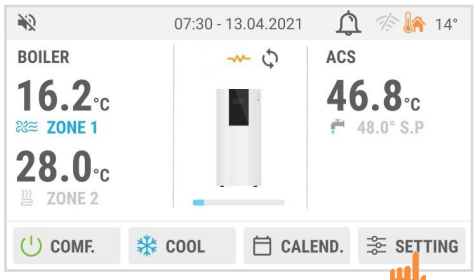
- PC
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

⇒ *With the unit powered and in OFF mode, connect the pen drive to the USB port of the hydro board*



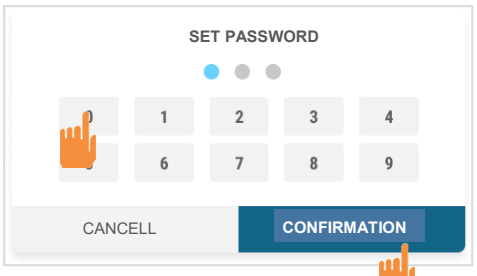
1



Press

Back

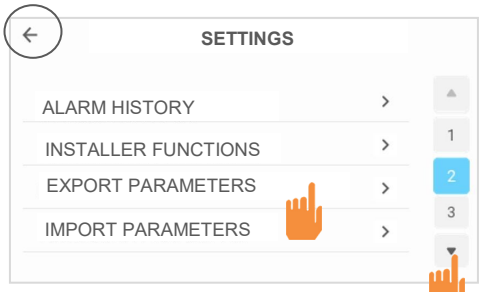
2



Enter password

Confirm

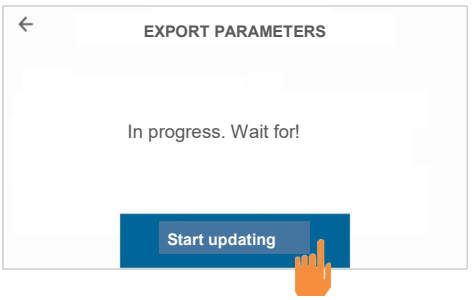
3



Press export parameters

Press

4



Press - Start

5

Press

⇒ *According to the unit configuration some parameters are visible and some not.*

Supervision controls

Address	Description	U.M.	Notes			
2600	ModoRemoto	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
			0	1=ON / 0=OFF	EnStatoRete = 1	ON/OFF via network (1=Comfort; 0=OFF) enabled when EnStatoRete=1
			1	1=Maintenance / 0=OFF	EnStatoRete = 1	Maintenance via network (1=maintenance) enabled when EnStatoRete=1
			2	1=Heat / 0=Cool	EnModoRete = 1	Machine mode via network (1=Heat, 0=Cool) enabled when EnModoRete=1
			3	Eco	EnStatoRete = 1	Economy via network (1=Eco) enabled when EnStatoRete=1
			4	DHW only mode	EnModoSoloACSRete = 1	1 = DHW only mode via network, enabled if EnModoSoloACSRete=1
			5	Request DHW	EnRichiestaACSRete = 1	1 = DHW request via network, enabled if EnRichiestaACSRete = 1
			6	DHW priority	EnPriorACSRete = 1	1= DHW priority active if EnPriorACSRete = 1
			7	Free		
			8	Anti-frost condition		1= anti-frost condition active
			9	Room thermoregulation request	EnRichiestaAmbRete = 1	1= room thermoregulation active, enabled if EnRichiestaAmbRete = 1
			10	Active solar		1= active solar
			11	Free		
			12	Only boiler	EnSoloCaldaiaRete = 1	1= boiler only operation, enabled if EnSoloCaldaiaRete = 1
			13	Free		
			14	Free		
			15	Free		
2601	RegistroFlag 1	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
			0	EnSetPointRete		Remote water setpoint enable
			1	EnSetSanitariaRete		Remote DHW setpoint enable
			2	EnModoRete	Season settings via network	Remote unit mode enable
			3	EnRichiestaACSRete	DHW request via network	Remote DHW request enable

			4	EnModoSoloACSRete	DHW only via network	Remote DHW only enable
			5	EnStatoRete	On, Off, Maintenance via network	Remote unit state enable
			6	EnPriorACSRete	DHW/circuit priority via network	Remote DHW priority enable
			7	EnSondaMandataRete		Remote delivery water temperature enable
			8	EnSondaRipresaRete		Remote return water temperature enable
			9	EnSondaAccumuloRete		Remote storage tank temperature enable
			10	EnSondaAriaRete	0: on-board reading (thermostat). 1: networked sensor reading	Remote room air temperature enable
			11	EnSondaMandataAuxRete		Remote auxiliary delivery water temperature enable
			12	Free		
			13	EnSondaTExtRete		Remote external temperature sensor enable
			14	Free		
			15	EnDemandLimitRete	Demand limit value via network	Remote demand limit value enable
2602	RegistroFlag 2	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
			0	EnSetAmbienteRete		Remote room setpoint enable
			1	EnRichiestaAmbRete	Room thermoregulation request via network	Remote room thermoregulation request enable
			2	EnSondaURAmbRete	0: room thermostat reading 1: networked sensor reading	Remote external relative humidity enable
			3	EnACSControlRete	To control DHW via the network, enable 2709_RegistroFlagACS	Remote DHW control enable
			4	Free		
			5	EnSoloCaldaiaRete	To control the "Boiler only" command via the network	Remote boiler only enable
			6	EnTempRugiada	Dewpoint sensor enable via network	Enable networked dewpoint register 2617
			7-15	Free		
2603	SetHeatRemoto	°C/10	Setpoint		EnSetPointRete = 1	Heating setpoint set by supervisor
2604	SetCoolRemoto	°C/10	Setpoint		EnSetPointRete = 1	Cooling setpoint set by supervisor
2605	SetH2OSanitariaRem	°C/10	Setpoint		EnSetSanitariaRete = 1	DHW setpoint set by supervisor

2606	TemperaturaRipresaRem	°C/10	Temperature	EnSondaRipresaRete = 1	System return temperature controlled by supervisor
2607	TemperautraMandataRem	°C/10	Temperature	EnSondaMandataRete = 1	System delivery temperature controlled by supervisor
2608	TemperaturaAriaEsternaRem	°C/10	Temperature	EnSondaTExtRete = 1	External air temperature controlled by supervisor
2609	TemperaturaAccumuloRem	°C/10	Temperature	EnSondaAccumuloRete = 1	System storage tank temperature controlled by supervisor
2610	TemperaturaAmbienteRem	°C/10	Temperature	EnSondaAriaRete =1	Room temperature controlled by supervisor
2611	TemperaturaMandataAuxRem	°C/10	Temperature	EnSondaMandataAuxRete =1	Auxiliary delivery temperature controlled by supervisor
2612	Libero				
2613	Libero				
2614	DemandLimitRem	kW	Limit	EnDemandLimitRete = 1	Demand limit value controlled by supervisor
2615	SetAmbienteRemoto	°C/10	Setpoint	EnSetAmbienteRete = 1	Room setpoint set by supervisor
2616	UrAmbienteRem	%	Humidity probe	EnSondaURAmbRete = 1	Room humidity controlled by supervisor
2617	TemperaturaRugiadaRem	°C*10	Temperature probe	EnTempRugiada=1	Dewpoint sent by supervisor

DHW controls						
Address	**Description**	**U.M.**	**Notes**			
2700	ModoRemoto Sanitaria	Bitmap	*Bit*	*Function*	*Enable*	*Note*
			0	1=ON / 0=OFF	EnComandiRete = 1	ON/OFF via network (1=DHW on; 0=DHW off) enabled if EnComandiRete=1
			1	Free		
			2	1 = Storage		1 = storage mode via network, enabled if EnComandiRete=1
			3	1 = Recirculation		1 = recirculation mode via network, enabled if EnComandiRete=1
			4	1 = No solar		1 = no solar mode via network, enabled if EnComandiRete=1
			5	1 = Resistances only		1 = DHW heating elements only mode via network, enabled if EnComandiRete=1
			6	1 = Boost		1=Boost modoe via network, enabled if EnComandiRete=1 and parameter xxx_EnBoost=1
			7	1 = Reload now		This bit must be set to 1 to start the recharge reload now and must be reset when 2801 bit9 (Reload Now Completed) is set to 1 is enabled by EnComandiRete=1
			8-15	Free		

2701	Setpoint accumulo	°C/10	Setpoint		EnSetAccumuloRete = 1	Storage tank setpoint set by supervisor
2702	Banda sanitaria	°C/10	Temperature		EnBandaSanitariaRete = 1	DHW temperature range setpoint controlled by supervisor
2703	Set mantenimento	°C/10	Setpoint		EnSetMantenimentoRete =1	Maintenance setpoint controlled by supervisor
2704	Setpoint antilegionella	°C/10	Setpoint		EnSetAntilegioRete = 1	Anti-Legionnaire's disease setpoint controlled by supervisor
2705	SetHotH20	°C/10	Setpoint		EnSetHotH2ORete =1	DHW maximum temperature setpoint
2706	Timer antilegionella	min	Time		EnComandoAntilegioRete =1	Interval between anti-Legionnaire's disease cycles controlled by supervisor
2707	Setpoint Boost	°C/10				
2708	LowTForceRes	°C/10	Temperature		EnDeltaTForceResRete =1	Minimum DHW temperature to trip safety heating elements controlled by supervisor
2709	Registro FlagACS	Bitmap	*Bit*	*Function*	*Enable*	*Note*
			0	EnComandiRete (2700)	EnACSControlRete=1	Remote DHW control enable
			1	EnSetAccumuloRete (2701)		Remote storage tank setpoint enable
			2	EnBandaSanitariaRete (2702)		Remote DHW range enable
			3	EnSetMantenimentoRete (2703)		Remote maintenance setpoint enable
			4	EnSetAntilegioRete (2704)		Remote anti-Legionnaire's disease setpoint enable
			5	EnSetHotH2ORete (2705)		Remote DHW maximum temperature enable
			6	EnComandoAntilegioRete (2706)		Remote anti-Legionnaire's disease interval enable
			7	EnDeltaTForceResRete (2708)		Remote DHW minimum temperature heating elements enable
			8	EnDeltaTSolareRete (2711)		Remote solar temperature enable
			9-15	Free		
2710	Libero					
2711	DeltaTSolare	°C/10	Temperature		EnDeltaTSolareRete = 1	Remote delta temperature between DHW and solar to enable solar

Secondary statuses

Circuit 1

Address	Id	Description	U:M:	*Notes*		
4500	1	Current H2O set point	°C*10	Setpoint		
4501	2	Return H2O operating temperature	°C*10	Temperature probe		
4502	3	Supply H2O operating temperature	°C*10	Temperature probe		
4503	4	Averaged temperature variation	°C*10	Temperature Delta		
4504	5	Instantaneous temperature variation	°C*10	Temperature Delta		
4505	64	Statuses and alarms bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				0	Circulator	1=On
				1	Anti-lock	1=Function running
				2	Valve in full recirculation (or full open) position	1=Positioned
				3	In posizionamento tutto ricircolo (o in tutto aperto)	1=In positioning
				4	Anti-ice	1=under way
				5	Circulator pump forcing due to compressor start-up	1=under way
				6	Set point limited by dew point	1=active
				7	Call	1=In energy request mode
				8	Supply temperature beyond limits	1=active
				9	Circulator pump thermal alarm	
				10	Defective return probe	
				11	Defective supply probe	
				12	Antifreeze alarm	
				13	Secondary on/of	1 =on / 0=off
				14	Free	
				15	Free	
4506	7	Circulator	%*10 (0…1000)	Circulator		
4507	8	Valve position (calculated)	%*10 (0…1000)			
4508	9	PID output calculation	-1000…1000			
4509	10	Valve request correction	%*10 (-100… 100)			
4510	11	Correction scan timer	Sec			
4511	12	Valve relay activation duration	Sec			
4512	13	Dew operating temperature	°C*10			
4513	14	Air operating temperature	°C*10			
4514	15	Operating R.H.	%			
4515-4529		Free				

Data subject to updates.

Circuit 2

Address	Id	Description	U:M:	*Notes*		
4530	1	Current H2O set point	°C*10	Setpoint		
4531	2	Return H2O operating temperature	°C*10	Temperature probe		
4532	3	Supply H2O operating temperature	°C*10	Temperature probe		
4533	4	Averaged temperature variation	°C*10	Temperature Delta		
4534	5	Instantaneous temperature variation	°C*10	Temperature Delta		
4535	64	Statuses and alarms bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				0	Circulator	1=On
				1	Anti-lock	1=Function running
				2	Valve in full recirculation (or full open) position	1=Positioned
				3	In posizionamento tutto ricircolo (o in tutto aperto)	1=In positioning
				4	Anti-ice	1=under way
				5	Circulator pump forcing due to compressor start-up	1=under way
				6	Set point limited by dew point	1=active
				7	Call	1=In energy request mode
				8	Supply temperature beyond limits	1=active
				9	Circulator pump thermal alarm	
				10	Defective return probe	
				11	Defective supply probe	
				12	Antifreeze alarm	
				13	Secondary on/of	1 =on / 0=off
				14	Free	
				15	Free	
4536	7	Circulator	%*10 (0…1000)	Circulator		
4537	8	Valve position (calculated)	%*10 (0…1000)			
4538	9	PID output calculation	-1000…1000			
4539	10	Valve request correction	%*10 (-100… 100)			
4540	11	Correction scan timer	Sec			
4541	12	Valve relay activation duration	Sec			
4542	13	Dew operating temperature	°C*10			
4543	14	Air operating temperature	°C*10			
4544	15	Operating R.H.	%			

Data subject to updates.

Secondary commands

Circuit 1

Address	id	Description	U:M:				
4600		Remote controls	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
				0	1=ON / 0=OFF	EnStatoRete=1	0 = OFF 1 = ON
				1-6	Free		
				7	Remote request	EnChiamataRete=1	0 = Request from digital input 1 = Request from network
				8-15	Free		
4601		Remote supply heat H2O setpoint	°C*10	Setpoint		EnSetAcquaRete=1	
4602		Remote supply cool H2O setpoint	°C*10	Setpoint		EnSetAcquaRete=1	
4603		Remote air temperature	°C*10	Temperature probe		EnSondaAriaRete=1	
4604		Remote R.H.	%	Humidity probe		EnSondaUmiditàRete=1	
4605		Remote dew temperature	°C*10	Temperature probe		EnTempRugiada=1	
4606		Flat register	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
				0	EnSetAcquaRete	0: Local 1: Network	Enables the network set point,if the latter fails it maintainsthe last value coming from thenetwork
				1	EnSondaAriaRete	0: Local 1: Network	0: the ambient thermostatreading applies (H1) 1: the networked value applies;if the latter fails, the thermostatreading applies
				2	EnSondaUmiditàRete	0: Local 1: Network	0: the thermostat reading applies 1: the networked value applies; if the latter fails, the thermostat reading applies
				3	EnStatoRete	0: Local 1: network not forceable	Enables on-off of the circuit from remote
				4	EnTempRugiada	0: Local 1: Network	0: the calculation made by the board applies 1: the networked value applies; if the latter fails, the calculation made by the board applies
				5	EnChiamataRete	0: Local 1: Network	0: request from digital inputs 1: request from bit7 of the remote control
				6-15	Free		
4607-4629		Free					

Data subject to updates.

Circuit 2

Address	id	Description	U:M:				
4630		Remote controls	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
				0	1=ON / 0=OFF	EnStatoRete=1	0 = OFF 1 = ON
				1-6	Free		
				7	Remote request	EnChiamataRete=1	0 = Request from digital input 1 = Request from network
				8-15	Free		
4631		Remote supply heat H2O setpoint	°C*10	Setpoint		EnSetAcquaRete=1	
4632		Remote supply cool H2O setpoint	°C*10	Setpoint		EnSetAcquaRete=1	
4633		Remote air temperature	°C*10	Temperature probe		EnSondaAriaRete=1	
4634		Remote R.H.	%	Humidity probe		EnSondaUmiditàRete=1	
4635		Remote dew temperature	°C*10	Temperature probe		EnTempRugiada=1	
4636		Flat register	Bitmap	*Bit*	*Function*	*Enable*	*Notes*
				0	EnSetAcquaRete	0: Local 1: Network	Enables the network set point,if the latter fails it maintainsthe last value coming from thenetwork
				1	EnSondaAriaRete	0: Local 1: Network	0: the ambient thermostatreading applies (H1) 1: the networked value applies;if the latter fails, the thermostatreading applies
				2	EnSondaUmiditàRete	0: Local 1: Network	0: the thermostat reading applies 1: the networked value applies; if the latter fails, the thermostat reading applies
				3	EnStatoRete	0: Local 1: network not forceable	Enables on-off of the circuit from remote
				4	EnTempRugiada	0: Local 1: Network	0: the calculation made by the board applies 1: the networked value applies; if the latter fails, the calculation made by the board applies
				5	EnChiamataRete	0: Local 1: Network	0: request from digital inputs 1: request from bit7 of the remote control
				6-15	Free		

Data subject to updates.

IDU Supervisor stata

Address	Id	Description	U.M.	Notes
4200	1	Current set point	°C/10	Setpoint
4201	11	Exchanger water inlet temperature (TWIn Return)	°C/10	Temperature probe
4202	12	Exchanger water outlet temperature (TWOut Supply)	°C/10	Temperature probe
4203	13	Total supply temperature after Auxiliary (T1)	°C/10	Temperature probe
4204	14	Outdoor air temperature (T4)	°C/10	Temperature probe
4205	67	DHW Setpoint	°C/10	Setpoint
4206	16	DHW accumulation temperature	°C/10	Temperature probe
4207		DHW temperature at boiler outlet (instantaneous)		Temperature probe
4208		Boiler DHW inlet temperature	°C/10	Temperature probe
4209	17	Utility pump	%/10	PWM
4210	74	Primary flow	(l/min)/10	
4211	79	Solar exchanger inlet probe	°C/10	Temperature probe
4212	20	Pressure 1	Bar/100	High pressure transducer
4213	21	Pressure 2 Reserved	Bar/100	High pressure transducer
4214	26	Thermoregulator Request	%/10	
4215	27	Compressor Request	rps	Compressor required frequency
4216	28	Compressor operating hours	hour	Compressor
4217	29	Comp starts	Number	Compressor
4218	35	Mininet/Node connected	X=node disconnected O=Node connected	
4219	36	Electric power absorbed	KW	Calculation of the absorbed power
4220	37	Current M-ODU	A	Absorbed current M-ODU
4221	38	Voltage M-ODU	V	Voltage M-ODU
4222	39	RPS Operativi Compressore	0-120 RPS	Compressor working RPS
4223	49	Return temperature	°C/10	Temperature probe
4224	50	Discharge temperature	°C/10	Temperature probe
4225	53	Thermostatic valve opening	STEPS	Thermostatic
4226	63	Fan	Number	Fan 0-15
4227	22	Riscaldatore ausiliario modulazione	%/10	Out 0-10V

4228	23	Boiler valve control / Auxiliary heater	0=Off 1=On			
4229	24	Boiler modulation (set) / boiler valve control	°C/10	Out 0-10V		
4230	64	Unit statuses bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				0	ON/OFF	0=OFF 1=ON
				1	Heat/Cool	0=Cool 1=Heat
				2	Eco	1=Eco active
				3	Only boilre	1=Only boilre
				4	Only DHW	1=Only DHW
				5	Defrosting	1= In defrosting mode
				6	Cycle reverse status	0 = De-energised valve 1 = Energised valve
				7	Alarms cumulative	0 = Inactive 1 = active
				8	DHW valve	0 = installation side 1 = DHW side
				9	Free	
				10	Boiler / additional heating element	0=OFF 1=ON
				11	Oil return	1 = active
				12	Smart grid SG	1 = active
				13	Smart grid EVU	1 = active
				14	Free	
				15	Free	
4231	65	DHW Status Bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				0	ON/OFF	0=OFF 1=ON
				1	Recirculation	0 = inactive recirculation 1= active recirculation
				2	Maintenance	1 = In maintenance
				3	DHW with Solar Only	1=DHW with Solar Only
				4	DHW with HP	1 = DHW production with HP
				5	DHW with Boiler	1 = DHW production with Bolier

				6	DHW with Solar	1 = DHW production with Solar
				7	Anti-legionella	1 = In anti-legionella
				8	DHW Pump	0=OFF 1=ON
				9	Active resistance	0=OFF 1=ON Copy of 2803 bit 0
				10	Solar available	Copy of 2801 bit 0
				11	Solar enabled	Copy of 2801 bit 1
				12	Reload now Completed	Copy of 2801 bit 9
				13	DHW flow switch	0=DHW flow switch OFF/1=ON
				14	Free	
				15	Free	
4232	2	Current step jump (including compensations)	°C/10			
4233	3	Timer relative to resource insertion	Seconds	Times		
4234	4	TimeScan dynamic relating to resource insertion	Seconds	Times		
4235	5	Compensazione T esterna	°C/10	Compensation		
4236	8	Compensazione sul carico	°C/10	Compensation		
4237	9	Compensazione Duty Cycle	°C/10	Compensation		
4238	10	Compensazione sulla durata	°C/10	Compensation		
Address	Id	Description	U.M.	Notes		
7000		Frequency minimum limit	Hz	Frequency minimum limit		
7001		Frequency maximum limit	Hz	Frequency maximum limit		
7002		Frequency requested by the thermoregulator	Hz	Frequency requested by the thermoregulator		
7003		Requested frequency (sent to outdoor unit)	Hz	Requested frequency (sent to outdoor unit)		
7004		Outdoor unit current frequency	Hz	Outdoor unit current frequency		
7005		Frequency stored for defrost mode	Hz	Frequency stored for defrost mode		

Address	Id	Description	U.M.	Notes		
2800		DHW internal probe	°C/10	Temperature		
2801		DHW and solar status bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				bit0	Available solar	
				bit1	Enabled solar	
				bit2	Free	
				bit3	Active anti-Legionella	
				bit4	Free	
				bit5	Free	
				bit6	Free	
				bit7	Free	
				bit8	= bit 0	
				bit9	Reload now Completed	It should be set to 1 when the reload function is now completed and is reset after a time equal to 600 seconds
				bit10	Free	
				bit11	Free	
				bit12	Free	
				bit13	Free	
				bit14	Free	
				bit15	Free	
2802		Solar temperature probes	°C/10	Temperature		
2803		DHW outputs Bitmap	Bitmap	*Bit*	*Function*	*Configuration*
				bit0	Active resistance	
				bit1	DHW pump	
				bit2	Free	
				bit3	Free	
				bit4	Free	
				bit5	Free	
				bit6	Free	

2803		DHW outputs Bitmap	Bitmap	bit7	Free	
				bit8	Free	
				bit9	Free	
				bit10	Free	
				bit11	Free	
				bit12	Free	
				bit13	Free	
				bit14	Free	
				bit15	Free	
2804		Current DHW set	°C/10	Setpoint		
2805		DHW resistance operation hours	°C/10	hour		
2806		DHW resistance starts	°C/10	Num		

Stati Supervisore ODU

Register address	Content	Note	
4300	The frequency at which the compressor operates	Units (Hertz). A non-zero means that the compressor is on	
4301	Out-of-machine operating mode	0: Shutdown 2: Cooling 3: Heating 4: Forced Cooling 5: Hot water	
4302	Fan speed	0-15 for 0-15 fan speed	
4303	T3 Coil temperature	Units: 0.1 °C (read value = actual valuer)	
4304	T4 Outdoor ambient temperature	Units: 0.1 °C (read value = actual valuer)	
4305	Tp Compressor condensing temperature	Units: 0.1 °C (read value = actual valuer)	
4306	Driver module protections code	100-109 for L0-L9, 0 for unseth protection 40 = H4 60 = P6 80 = F8	
4307	External current (AC side)	Unit: Ampere	
4308	External AC voltage	Unit: Volts	
4309	EEV opening	Real value = actual opening/8	
4310	Error code	See appendix	
4311	State	ODU states (1=On ; 0= Off)	
		BIT6-BIT15	Reserved
		BIT5	External test mode flag
		BIT3	Return oil
		BIT1	Defrost
		Bit0	External power acquisition enable bit
4312	Th Compressor suction temperature	Units: 0.1 °C (read value = actual valuer)	
4313	Pressure value 1	True value: 100 units (MPa)	
4314	Pressure value 2	True value: 100 units (MPa) - RESERVED	
4315	DC bus current	Unit: Ampere	
4316	DC bus voltage	Back pass-back value: actual value/10 (units: volts)	
4317	Tfin temperature of the module board	Units: 0.1 °C (read value = actual valuer)	
4318	External current limit scheme	The actual running scenario value [0-8]	
4319	The external machine runs a limited frequency code	0 = Unlimited frequency	
		1 = T4 limit frequency	
		2 = T3 limit frequency	
		3 = The current limit of the whole machine	
4328		4 = ACVolt limit frequency	
4329		5 = Tfin frequency limit	
4330		6 = Tp limit frequency	
4331		7 = Pressure limit frequency	
4332		8 = Twin frequency limit	
4333		9 = T3e frequency limit	
4320	The maximum operational frequency	[Hz] Minimum value of frequency limits	

4321	The whole machine consumes power (high data)	The power consumption data (32bits) will be returned via the register when the external power input is connected to the matching meter.
		Power data --- 16bits high
4322	The whole machine consumes power (low data)	Power data --- 16bits low
4323	Set the frequency	If the mode is non-shutdown, is the requested frequency;if the set frequency is 0 is still shutdown.
4324	internal command	
4325	Mode set [LSByte]	0 = Shutdown 2 = Cooling mode 3 = Heating mode 5 = Hot water mode
	Size [MSByte]	ODU unit size 0 not yet read from ODU unit or wrong value read 1 = 4 kW 2 = 6 kW 3 = 8 kW 4 = 10 kW 5 = 12 kW 6 = 14 kW 7 = 16 kW
4326	Heating highest operating frequency	unit Hz
4327	Heating minimum operating frequency	unit Hz
4328	Cooling highest operating frequency	unit Hz
4329	Cooling minimum operating frequency	unit Hz

Data subject to updates.

AHS Supervison stata

Modbus IDU	Description	min.	max.	u.m.
4400	Heating enabling, pump switch-on (if set to 1) - Executes and removes the heating request from the boiler	0	1	--
4401	DHW comfort (if at 1) -Enabling and disabling of DHW comfort and preheating function	0	1	--
4402	Summer (if = 1) / Winter (if = 0) - Enabling and disabling of DHW operation (instant boiler as well)	0	1	--
4403	DHW disabling (if = 1)	0	1	--
4404	Fault signalling in progress (0=no fault-1=fault in progress)	0	1	--
4405	Heating request in progress (if = 1)	0	1	--
4406	DHW request in progress (if = 1)	0	1	--
4407	Flame present signalling (if 1 = flame present)	0	1	--
4408	Block Fault signalling (if 1=generic boiler burner block alarm)	0	1	--
4409	Low pressure fault (if = 1)	0	1	--
4410	Heating setpoint	0.0	100.0	°C
4411	DHW setpoint	0.0	127.0	°C
4412	BLOR remote release	0	255	
4413	Supply heating temperature	0.0	127.0	°C
4414	Return heating temperature	0.0	127.0	°C
4415	DHW temperature	0.0	127.0	°C
4416	Outdoor temperature	0.0	127.0	°C
4417	Alarm code present - as per the inst/use manual list of faults	0	255	
4418	Burner modulation level	0.0	100.0	%
4419	System pressure	0.0	10.0	bar

Data subject to updates.

Saftey

Operate in compliance with safety regulations in force .

Use single protection devices:

gloves, glasses, helmet, etc..

General

Maintenance must be performed by authorized centres or by qualified personnel

The maintenance allows to:

- maintaining the unit efficient
- reduce the deterioration speed all the equipment is subject to over time
- collect information and data to understand the efficiency state of the unit and prevent possible faults

WARNING

⇒ *Before checking, please verify the following:*

⇒ *the electrical power supply line should be isolated at the beginning*

⇒ *the line isolator device is open, locked and equipped with the suitable warning sign*

⇒ *make sure no tension is present*

⇒ *After switching the power off, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.*

⇒ *Before accessing check with a multimeter that there are no residual stresses.*

Frequency of interventions

Perform an inspection every 6 months.

However, frequency depends on the type of use.

Pan inspections at close intervals in the event of:

- frequent use (continuous or very intermittent use, near the operating limits, etc)
- critical use (service necessary)

WARNING

⇒ *Before performing any work, please read carefully: SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32*

SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32

Area checks

Before working on systems containing flammable refrigerants, perform safety checks to reduce the risk of combustion to the minimum. Before performing any reparation operations on the cooling system, comply with the following warnings.

Work procedures

Operations must be performed following a controlled procedure so as to reduce the risk of flammable gases or vapours developing.

General work area

All the personnel in charge with maintenance operations and other operators working in the local area must be instructed and monitored as regards the nature of the intervention.

Avoid working in tight spaces. The area surrounding the working space must be cordoned off. Make sure the area is secured by monitoring the flammable material.

Check the presence of refrigerant

Both before and during operations, the area must be monitored with a dedicated refrigerant detector to make sure the technician is aware of the presence of potentially-flammable environments.

Make sure the leak detection equipment is suitable for use with flammable refrigerants and therefore without sparks, suitably sealed or intrinsically safe.

Presence of the fire extinguisher

If hot interventions are not performed on cooling equipment or connected components, suitable fire fighting equipment must be kept at hand.

Keep a dry-powder or CO2 extinguisher near the loading area.

No ignition source

It is absolutely forbidden to use ignition sources that may lead to fire or explosion during operations on the cooling system or on pipes that contain or have contained flammable refrigerant.

All possible ignition sources, including cigarettes, must be kept sufficiently away from the installation, reparation, removal and disposal site as flammable refrigerant may be released in the surrounding area.

Before starting operations, the area surrounding the equipment must be inspected to guarantee the absence of flammables or combustion risks. “SMOKING IS FORBIDDEN” signs must be affixed.

Ventilated area

Before intervening on the system or performing any hot intervention, make sure to be in an outdoor or suitably ventilated area.

Ventilation must be maintained during operations. Ventilation must disperse the released refrigerant safely, preferably outdoors in the atmosphere.

Cooling equipment checks

Should a replacement be necessary, the new components installed must be suitable for the purpose envisaged and compliant with specifications.

Always follow the manufacturer guidelines on maintenance and assistance. In case of doubt, contact the manufacturer technical office for assistance.

The following checks must be preformed on systems containing flammable refrigerants:

- the quantity of the charge must comply with the size of the room where the parts containing refrigerant are installed;
- the machine and ventilation intake function correctly and are not obstructed;
- If an indirect cooling circuit is used, the secondary circuits must be checked to verify the presence of refrigerants; the marking on the equipment remains visible and readable;
- Make sure markings and symbols are always readable; cooling pipes or components must be installed in a position that makes improbable their exposure to substances that may corrode the components containing refrigerant, unless they are manufactured with material intrinsically resistant to corrosion or suitably protected against corrosion.

Electrical device checks

The reparation and maintenance of electric components must include initial safety checks and component inspection procedures.

In case of a fault that compromises safety, do not perform any electrical connection to the circuit until said fault is suitably resolved.

If it is not possible to repair the fault immediately and electrical components need to remain functioning, a temporary solution must be adopted. This must be reported to the owner of the equipment so as to keep all parties informed.

Initial safety checks must include:

- that condensers are emptied. This operation must be performed safely to avoid any sparks:
- that electrical components and wiring are not exposed during the charging, recovering or venting phases;
- That the earth conductor is continuous.

Repairing sealed components

- During the reparation operations of sealed components, disconnect all the equipment before removing sealed casings etc. If, during operations, it is absolutely necessary for the equipment to remain connected, a leak detection device must be placed in the most critical point so as to report any potentially-dangerous situation.
- Pay particular attention to what follows to guarantee that, while intervening on electrical components, the housing is not altered in a way so as to affect the level of protection. This includes damage to cables, an excessive number of connections, terminals not compliance with the original specifications, damage to gaskets, an unsuitable installation of gaskets, etc.
- Make sure the device is installed safely.
- Check that the seals or sealing materials are not altered in such a way that they no longer the impede the entry of flammable environments. Spare parts must comply with manufacturer specifications.

NOTE:

⇒ *Using silicone sealants may inhibit the effectiveness of a few types of leak detection equipment. It is not necessary to isolate intrinsically safe components before performing operations on them.*

Reparation of intrinsically safe components

Do not apply permanent inductive or capacitive loads to the circuit without making sure that they do not exceed the admissible voltage and current allowed for equipment in use.

Intrinsically safe components are the only component type on which operations can be performed in a flammable atmosphere. The testing device must show a correct value. Replace components only with the parts specified by the manufacturer.

Following a leak, other parts could lead to the combustion of the refrigerant in the atmosphere.

Wires

Make sure wires are not subjected to wear, corrosion, excessive pressure or vibration, that there are no sharp edges and that they do not produce other negative effects on the environment. The inspection must also keep into consideration the effects of tine or the continuous vibration caused e.g. by compressors or fans.

Detection of flammable refrigerants

Under no circumstance is it possible to use potential ignition sources to search or detect refrigerant leaks.

Do not use halide lights (or any other open flame detectors).

Leak detection methods

The following leak detection methods are considered acceptable for systems containing flammable refrigerants. Electric leak detectors must always be used to identify flammable refrigerants, although they do not present a suitable sensitivity level or require recalibration (detection equipment must be calibrated in an area free from refrigerants).

Check that the detector is not a possible source of ignition and that it is suitable for the refrigerant. Leak detection equipment must always be set to an LFL percentage and calibrated depending on the refrigerant used, so the correct gas percentage (25% max) must be verified.

Leak detection fluids are suitable for most refrigerants, although using detergents containing chlorine should be avoided as this substance may react with the refrigerant and corrode copper pipes.

If a leak is suspected, all open flames must be removed or switched off.

If a leak is identified that requires brazing, all the refrigerant must be recovered from the system or isolated (using interception valves) in a section of the system far away from the leak. Oxygen-Free-Nitrogen (OFN) is then purged through the system both before and during the brazing procedure.

Removal and evacuation

When intervening on the cooling circuit to perform repair work or any other type of work, always follow the normal procedure. However, considering the risk of flammability, we recommend following the best practices. Comply with the following procedure:

- remove the refrigerant;
- purge the circuit with inert gas;
- evacuate;
- Purge again with inert gas;
- Interrupt the circuit with interruption or brazing.

The refrigerant charge must be collected in suitable recovery tanks. To make the unit safe, flushing with Oxygen-free-Nitrogen must be performed. This procedure may have to be repeated multiple times. Do not use compressed air or oxygen for this operation.

Flushing is obtained interrupting the system vacuum with OFN and filling until the operating pressure is obtained, then releasing into the atmosphere and restoring the vacuum. This process must be repeated until there is no trace of refrigerant in the system.

When using the final OFN charge, the system must be vented to the atmospheric pressure

to allow the intervention. This step is essential to perform

brazing operations on the pipes.

Make sure that the vacuum pump intake is not near ignition sources and that there is

suitable ventilation.

Charging operations

In addition to conventional charging operations, the following requirements must be complied with:

- When using charging equipment, make sure that the various refrigerants are not contaminated. Flexible tubes or conduits must be as short as possible to reduce to the minimum the quantity of refrigerant contained.
- Tanks must be kept in a vertical position.
- Before loading the system with refrigerant, check that the cooling system is earthed.
- Label the system when fully charged (unless already labelled).
- Make sure not to fill the cooling system excessively.
- Before recharging the system, the pressure must be tested with OFN. A leak test must be performed after the charging operations but before commissioning. Before leaving the site, perform an additional leak test.

Dismantling

Before performing this procedure, it is essential that the technician has become familiar with the equipment and the relative details.

We recommend employing good practices for a safe recovery of the refrigerants.

Before performing the operation, take a sample of oil and refrigerant should an analysis be necessary before reusing the regenerated refrigerant. Before performing the operation, check the availability of electricity.

- Become familiar with the equipment and how it functions.
- Electrically isolate the system.

Before attempting the procedure, check that:

- The mechanical manipulation equipment is available, if necessary, to handle refrigerant tanks;
- All the personal protection equipment is available and employed correctly;

- The recovery procedure is monitored at all times by skilled personnel;
- The recovery equipment and tanks comply with suitable standards.
- If possible, pump the cooling system.
- If it is not possible to obtain a vacuum, make sure that a collector removes the refrigerant from various parts of the system.
- Before proceeding with the recovery, check that the tank is located on the scales.
- Start up the recovery machine and use it following the instructions by the manufacturer.
- Do not fill the tanks excessively. (Do not exceed 80% of the liquid volume).
- Do not exceed the tank's maximum operating pressure, not even momentarily.
- Once the tanks are filled correctly and the process is over, make sure that the tanks and equipment are immediately removed from the site and that all insulation valves on the equipment are closed.
- The refrigerant recovered must not be loaded into another cooling system unless it has been cleaned and checked.

Labelling

Equipment must be labelled reporting the dismantling and emptying of the refrigerant.

Labels must be dated and signed.

Make sure all the equipment is labelled and reporting the presence of flammable refrigerant.

Recovery

When removing the refrigerant from the system, please adopt good practices to remove all refrigerants safely in case of both assistance or decommissioning operations.

When transferring the refrigerant into the tanks, make sure only suitable tanks are used to recover the refrigerant.

Make sure enough tanks are used.

All the tanks to be used are designated for the recovered refrigerant and are labelled for that specific refrigerant (e.g. special tanks for refrigerant collection.

Tanks must be equipped with a perfectly-functioning safety valve and relative interception valves.

Empty recovery tanks are evacuated and, if possible, cooled before recovery.

Recovery equipment must be perfectly functioning with the respective instruction booklets at hand and they must be suitable to recover flammable refrigerants. A series of perfectly-functioning calibrates scales must also be available.

Flexible tubes must be equipped with leak-proof disconnection fittings in good condition. Before using the recovery machine, make sure it is in good condition, maintained and that all associated electrical components are sealed to avoid combustion in case of a refrigerant leak. Please contact the manufacturer in case of doubt.

The refrigerant recovered must be taken to the supplier in suitable recovery tanks and with the relative waste transfer note suitably filled in.

Do not mix the refrigerants in the recovery units nor in the tanks.

If it is necessary to remove compressors or compressor oils, make sure they are evacuated to an acceptable level to make sure no trace is left of the flammable refrigerant inside the lubricant. The evacuation process must be performed before taking the compressors back to the suppliers.

The electric resistance must be used with the compressor body only to accelerate this process.

Operations to discharge the oil from the system must be performed in full safety.

20. Transport, mark and storage

1 Transport of equipment containing flammable refrigerants
  Compliance with transport regulations
2 Marking of equipment with symbols
  Compliance with local regulations
3 Disposal of equipment employing flammable refrigerants
  Compliance with national regulations
4 Storage of equipment/devices
  The equipment must be stored in compliance with the instructions provided by the manufacturer.

5 Storing packed (unsold) equipment
Packing must be performed in such a way that mechanical damage to the equipment inside it does not cause refrigerant leaks.
The maximum number of elements that can be stored together is determined by local regulations.

Checklist for recommended regular checks

Checks effected on.....by.....of the company.....

√	intervention frequency (months)	1	6	12
□	Panel fixing			X
□	External unit fan fixing		X	
□	External unit coil cleaning		X	
□	Charged pressure of water system		X	
□	Docking joints, caps and shafts		X	
□	Leak visual check on solar panel fittings		X	
□	Air in the pipes			X
□	Flowmeter function			X
□	Drain dirt separator	X	X	X
□	Capacity contactor status			X
□	Terminal closing, cable insulation integrity			X
□	Voltage and phase unbalancing (no load and on-load)		X	
□	Absorptions of the single electrical loads		X	
□	Compressor carter resi stance test		X	
□	Leak control *			X
□	Measure of operating parameters of the refrigerant circuit		X	
□	Check drier filter			X
□	Presence of oil stains		X	
□	Closure of pipe unions, Scrader caps		X	
□	Protective device / integrity test : safety valves, pressure switches, thermostats, flow switches etc		X	
□	Check schedulers, setpoints, compensations, etc...		X	
□	Control device/integrity test: alarm signalling, thermometers, probes, pressure gauges etc		X	
□	Fill in the unit booklet			

NOTE

⇒ *Refer to the local regulations. Companies and technicians performing installation, maintenance/repair, leak control and recovery operations must be CERTIFIED as set out by the local regulations.*

Unit booklet

It's advisable to create a unit booklet to take notes of the unit interventions.

In this way, it will be easier to adequately schedule the various interventions and facilitate any troubleshooting.

On the schedule note:

- date
- intervention description
- carried out measures etc.

Standby mode

If a long period of inactivity is foreseen:

- turn off the power
- avoid the risk of frost (empty the system or add glycol)

Turn off the power to avoid electrical risks or damages by lightning strikes.

With lower temperatures keep heaters turned on in of the electrical panel (option).

It's recommended that the re-start after the stopping period is performed by a qualified technician, especially after seasonal stops or seasonal

switching.

When restarting, refer to what is indicated in the "start-up" section.

Schedule technical assistance in advance to avoid hitches and to guarantee that the system can be used when required

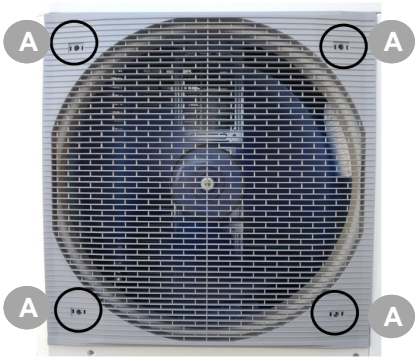
External unit fan

Check:

- ensure that the fan and the relative protection grids are well fixed
- The fan bearings (evident by noise and anomalous vibrations)
- the terminal protection covers are closed and the cable holders are properly positioned

Access to the fan

- Remove the screws (A)



DANGER

⇒ *Exercise caution to avoid a possible hand injury*

Outdoor unit air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

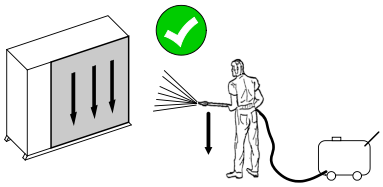
The coil must allow maximum thermal exchange, therefore, the surface must be clear from dirt and scaling.

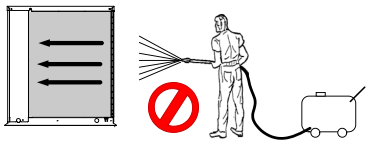
Clean the air inlet side.

Use a soft brush or aspirator or pressurised air jet or high-pressure water jet machine.

Keep the direction parallel to the flow of the flaps to avoid damages.

Check the aluminium flaps have not been damaged or folded, on the contrary contact an authorised after-sales assistance centre to "comb" the coil for excellent air flow.





Outdoor unit condensate drain

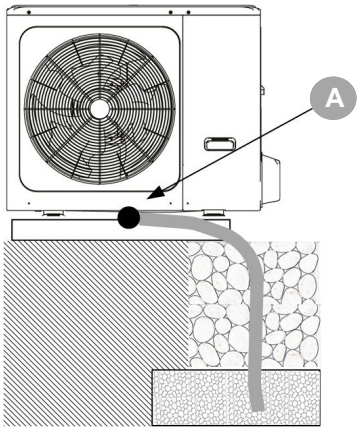
Dirt or scale can give rise to clogging.

Also, microorganisms and mould can flourish in the bowl.

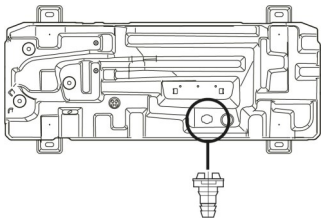
Foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

Once cleaning is completed, pour water inside the bowl to check the regular outflow.

A - Condensate discharge connection



Size 2.1 – 5.1



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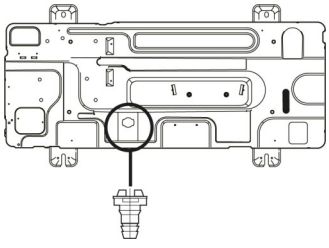


Periodic system checks

- Charge check of expansion tanks
- Water filter cleaning check
- Check system and aqueduct operating pressures

Expansion vessel

Check the expansion vessel charge (at least once a year).

First check that the expansion vessel is totally drained of water.

If you necessary load with nitrogen, take care that the pressure does not exceed the value indicated on the label.

Water filter

Check that no impurities prevent the correct passage of water.

Saftey valves

The safety valves must be checked regularly.

Almost all losses are caused by impurities deposited inside the valve.

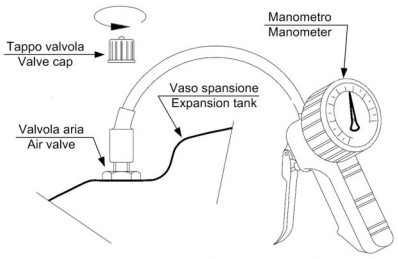
It's normal if some water drops from the hole of saftey valve during operation.

But, if there is a great amount of water, call your service agent for instructions.

Please beware of burn, beware of the hot water from the valve.

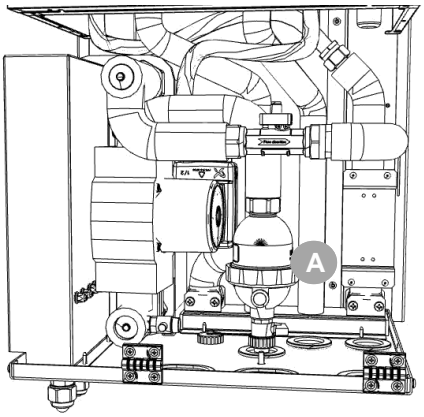
To carry out a wash:

- manually open the valve
- rotate the knob in the sense indicated by the arrow in the knob.



Magnetic sludge

Magnetic filter "A" separates the impurities (sand particles, rust ... etc) present in the system water.



The impurities are collected in a settling chamber.

Cleaning the filter can also be done with a working system.

Clean the filter:

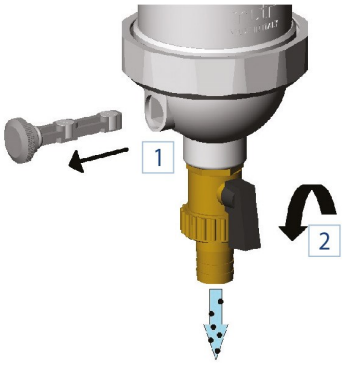
- During the start up of the unit
- After one week from the start up
- After one month from start up
- Once a year

ATTENTION

⇒ *Restore system pressure*

Unloading

- Remove the magnet holder cartridge (1);
- Open the tap to purge impurities (2);
- Close the tap.

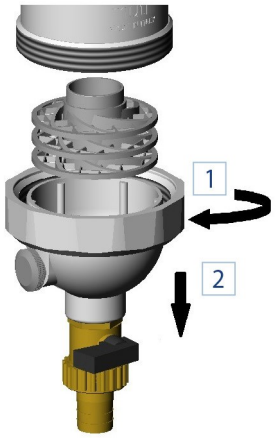


Cleaning (extraordinary)

Close the shut-off valves of the system and water supply.

Disassembly sequence:

- Unscrew the ring nut (1) of the lower cover (2) of the dirt separator and remove the filter
- Take out the magnet cartridge.
- Clean the filter and the bottom cover.
- Reinsert the magnet cartridge.
- Close the bottom cover of the dirt separator
- Open the shut-off valves of the plant and aqueduct.



Check pressure of the plant

Structure

Check the condition of the parts making up the structure.

Paint so as to eliminate or reduce oxidation at the points in the unit where this problem may occur.

Check that the panelling is fastened correctly.

Poor fastening may give rise to malfunctions and abnormal noise and vibration.

CLEANING THE OUTER COATING.

Clean with:

- soapy water.
- water-based detergents containing anionic and/or non-ionic surfactants.

Always rinse with clean water.

WARNING

Do not use:

A. solvent-based degreasing agents such as: acetone, denatured ethyl alcohol, trichloroethylene, white spirit, etc.;
B. dilute acids in aqueous solution (Hydrochloric Acid, Nitric Acid) and products containing dilute acids.
C. dilute bases in aqueous solution (Caustic Soda, Sodium Hypochlorite, Ammonia)
D. fluorinated hydrocarbons
E. mineral-based lubricating oils.

⇒ *These substances can attack the surface of the product and lead to the formation of cracks and, over time, to the possibility of breakage of the plastic material.*

Disconnection

WARNING

⇒ *Before performing any operation, read the warnings found in the Maintenance chapter.*

Avoid leak or spills into the environment.

Before disconnecting the unit, the following must be recovered, if present:

- refrigerant gas
- Anti-freeze solutions in the hydraulic circuit

Awaiting decommissioning and disposal, the unit can also be stored outdoors, as bad weather and rapid changes in temperature do not harm the environment provided that the electric, cooling and hydraulic circuits of the unit are intact and closed.

Warning:
Fire hazard
Flammable materials

WEEE INFORMATION

The manufacturer is registered on the EEE National Register, in compliance with implementation of Directive 2012/19/EU and relevant national regulations on waste electrical and electronic equipment.

This Directive requires electrical and electronic equipment to be disposed of properly.

Equipment bearing the crossed-out wheelie bin mark must be disposed of separately at the end of its life cycle to prevent damage to human health and to the environment.

Electrical and electronic equipment must be disposed of together with all of its parts.

To dispose of "household" electrical and electronic equipment, the manufacturer recommends you contact an authorised dealer or an authorised ecological area.

"Professional" electrical and electronic equipment must be disposed of by authorised personnel through established waste disposal authorities around the country.

In this regard, here is the definition of household WEEE and professional WEEE:

WEEE from private households: WEEE originating from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Subject to the nature and quantity, where the waste from EEE was likely to have been by both a private household and users of other than private households, it will be classed as private household WEEE;

Professional WEEE: all WEEE which comes from users other than private households.

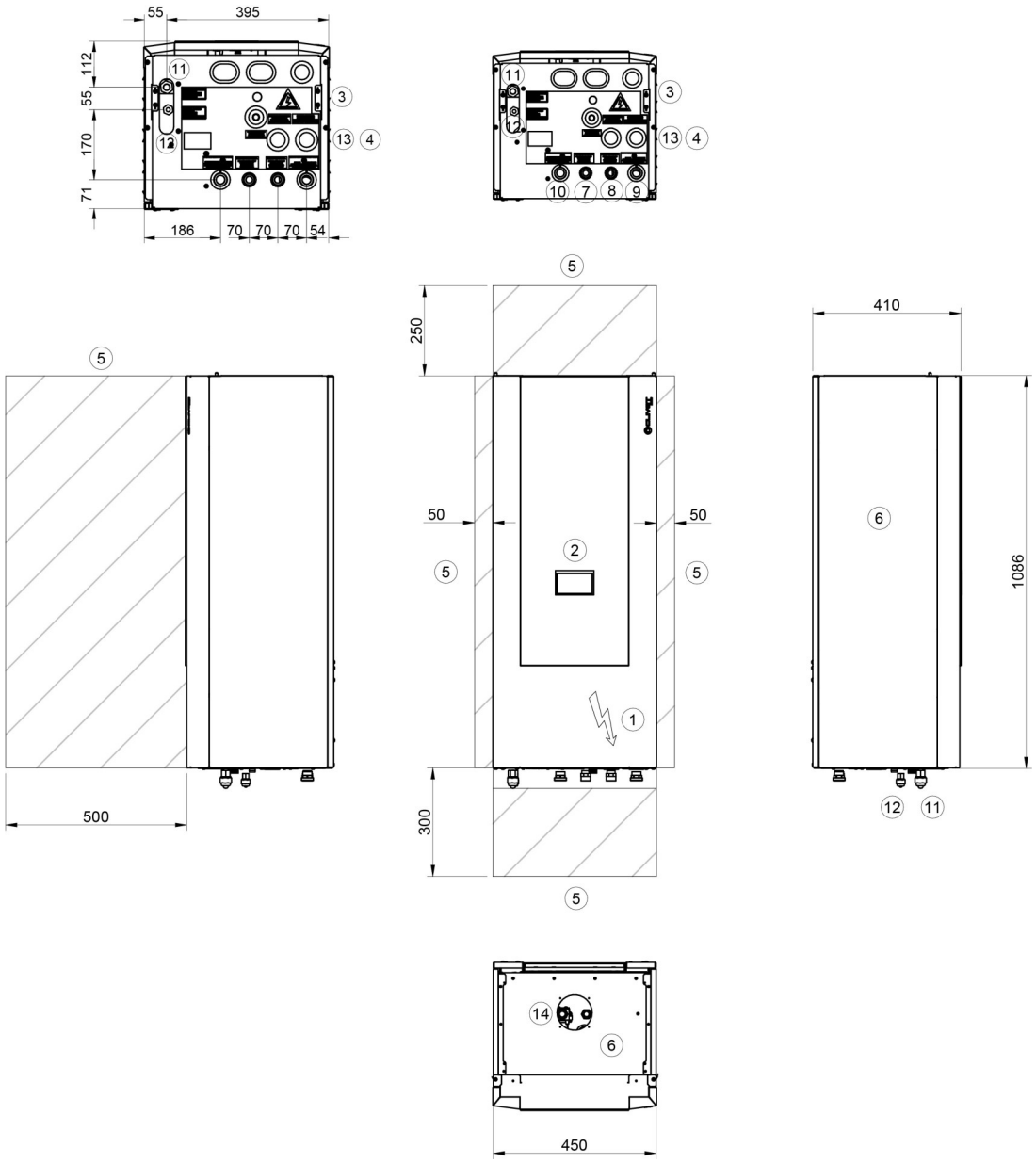
This equipment may contain:

refrigerant gas, the entire contents of which must be recovered in suitable containers by specialised personnel with the necessary qualifications;

- lubrication oil contained in compressors and in the cooling circuit to be collected;
- mixtures with antifreeze in the water circuit, the contents of which are to be collected;
- mechanical and electrical parts to be separated and disposed of as authorised.

When machine components to be replaced for maintenance purposes are removed or when the entire unit reaches the end of its life and needs to be removed from the installation, waste should be separated by its nature and disposed of by authorised personnel at existing collection centres.

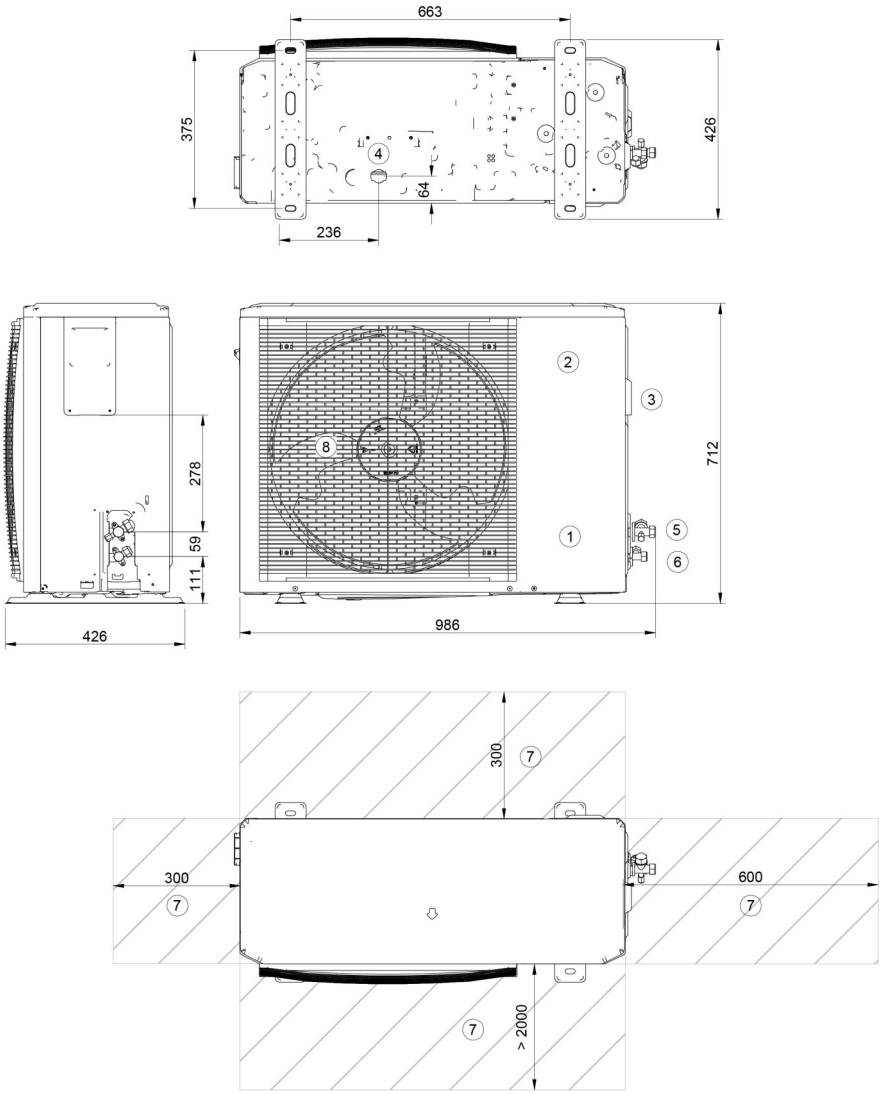
Dimensional - Internal unit



1 Electric panel
2 Controller keypad
3 Electrical line intake
4 Condensate drain
5 Functional spaces
6 Gas boiler
7 Boiler DHW supply ø 3/4" M
8 Boiler DHW return ø 3/4" M
9 Supply to system ø1" M
10 Return to system ø1" M
11 Gas line (ø5/8" G)
12 Liquid line (ø3/8" G)
13 Gas boiler inlet
14 Boiler fumes outlet

Size		A	B
Hydronic + structure	kg	39	41
24kW boiler	kg	31	--
34kW boiler	kg	34	34
Operating weight	kg	70/73	75
Shipping weight	kg	44	46

External unit
Size 2.1 - 3.1

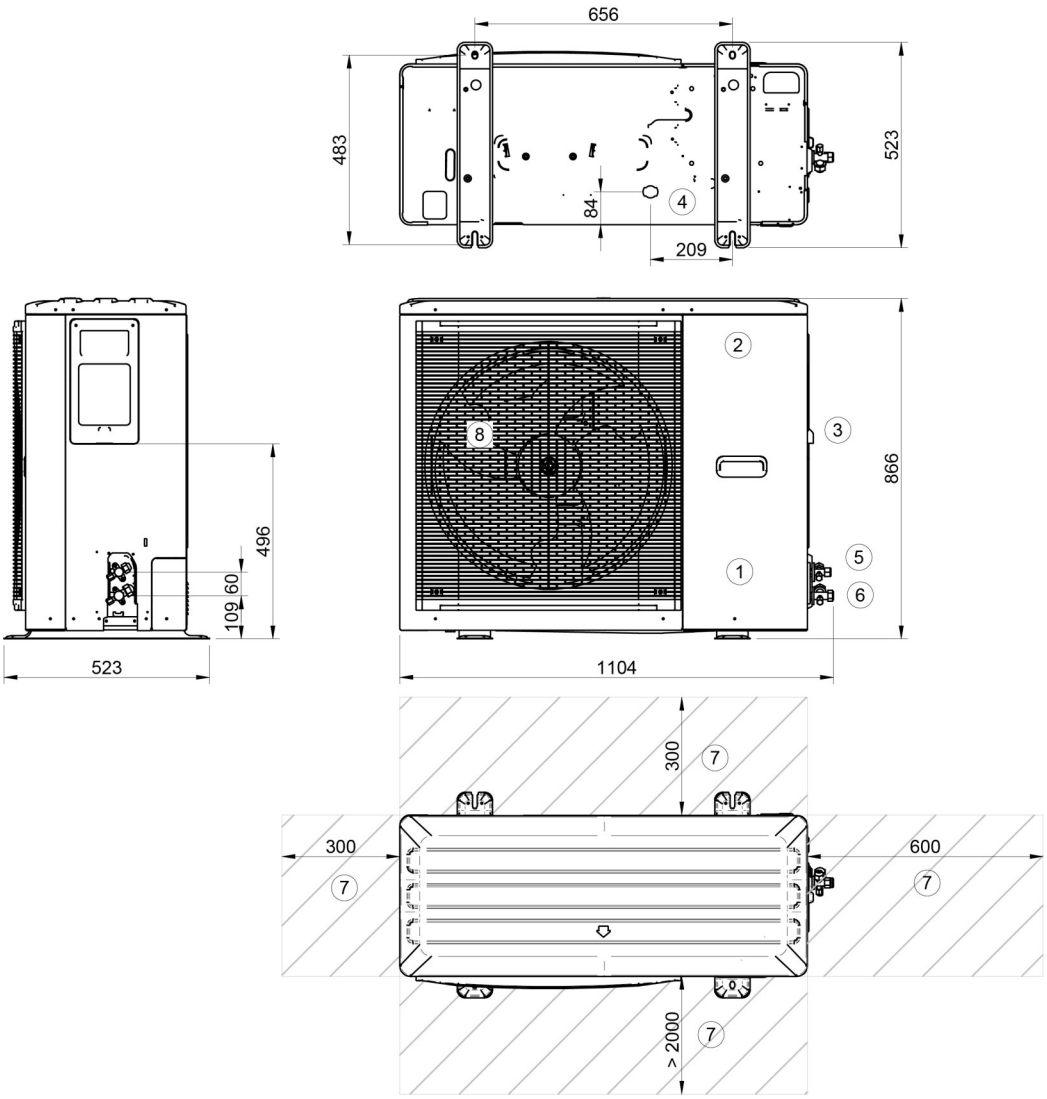


1 Compressor compartment
2 Electrical panel
3 Power input
4 Condensate drain
5 Suction line connection (ø 1/4" G)
6 Liquid line connection (ø 5/8" G)
7 Functional spaces
8 Electric fan

(M) Air supply

Size		2.1 –3.1
Operating weight	kg	58
Shipping weight	kg	64

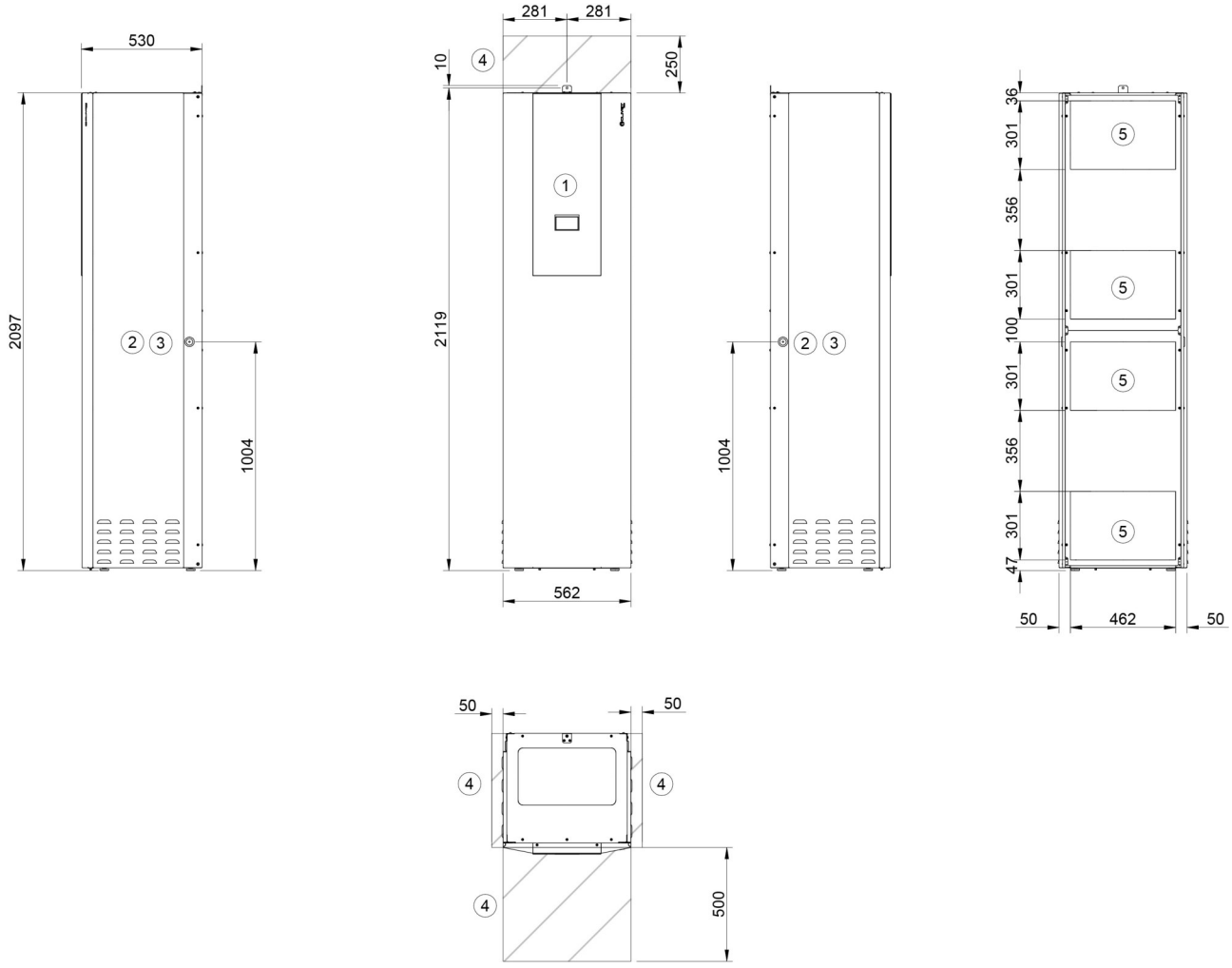
Size 4.1 - 5.1



1 Compressor compartment
2 Electrical panel
3 Power input
4 Condensate drain
5 Suction line connection (ø3/8" G)
6 Liquid line connection (ø5/8" G)
7 Functional spaces
8 Electric fan

Size		4.1 -5.1	6.1 - 8.1	6.1 - 8.1
Power supply		1ph		3ph
Operating weight	kg	77	96	112
Shipping weight	kg	88	110	125

SQKN-YEE 1 BH - A-B T1

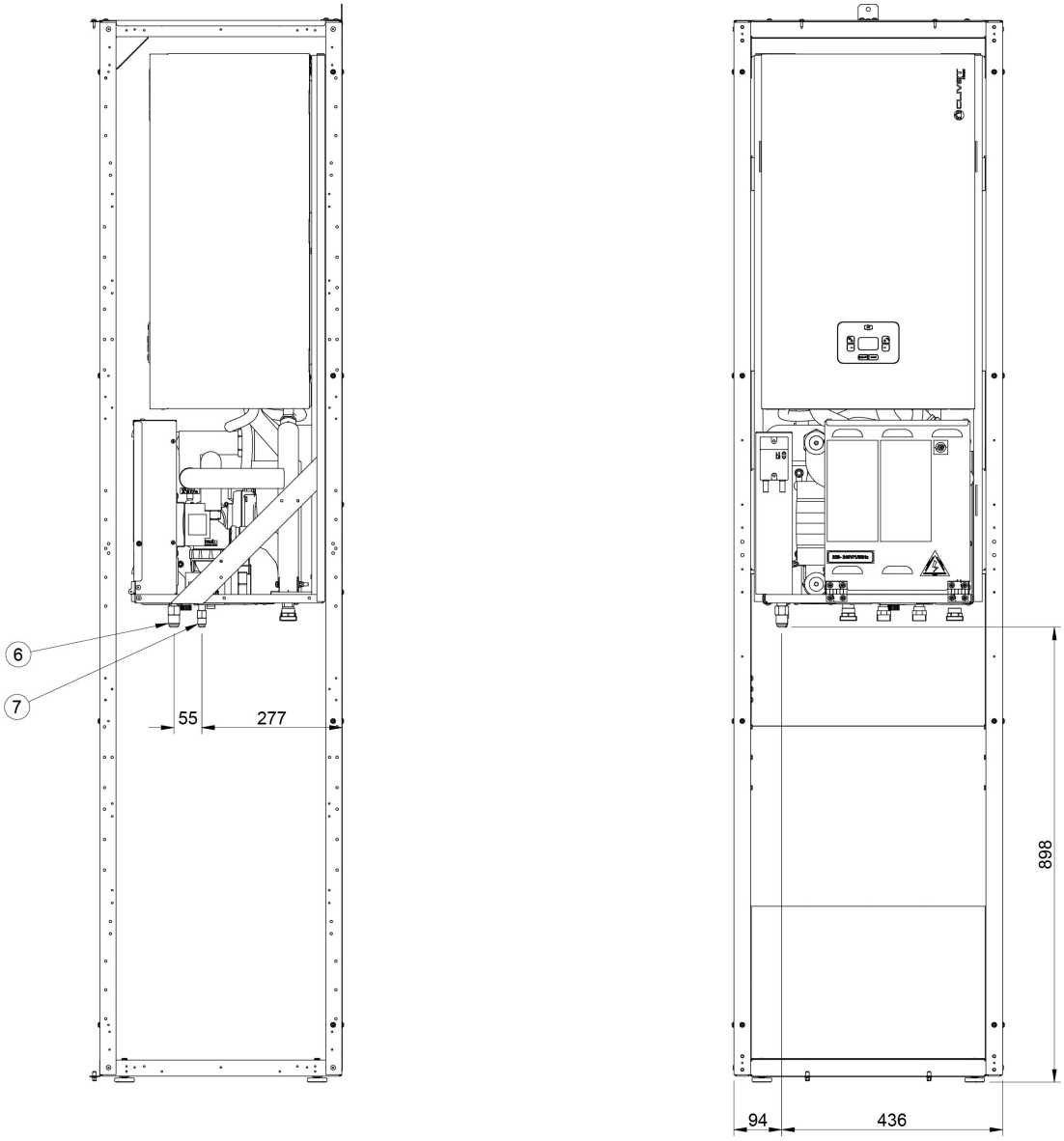


1. Unit control keypad
2. Electric line input
3. Condensate drain
4. Functional clearence
5. Precuts holes

The presence of optional accessories may result in a substantial variation of the reported weights.

Weight distribution		
Code		PEGQ00001
Shipping weight	Kg	75

SQKN-YEE 1 BH - A-B T1

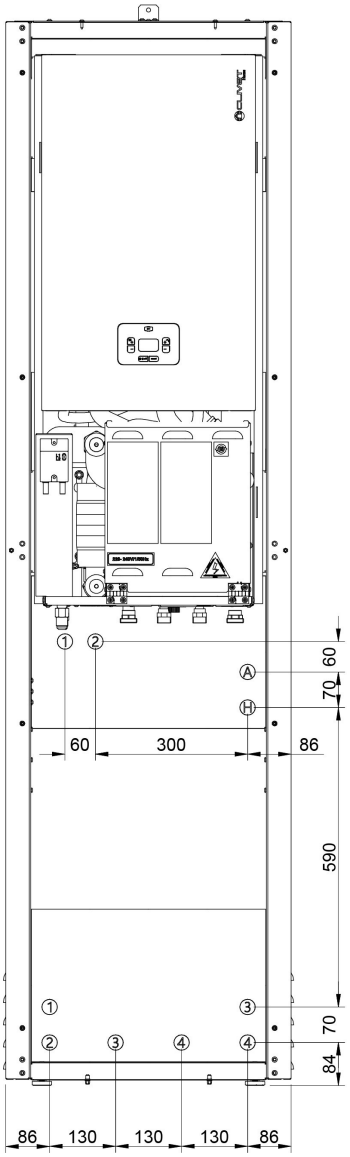


6. Suction line connection GAS M 5/8"
7. Liquid line connection GAS M 3/8"

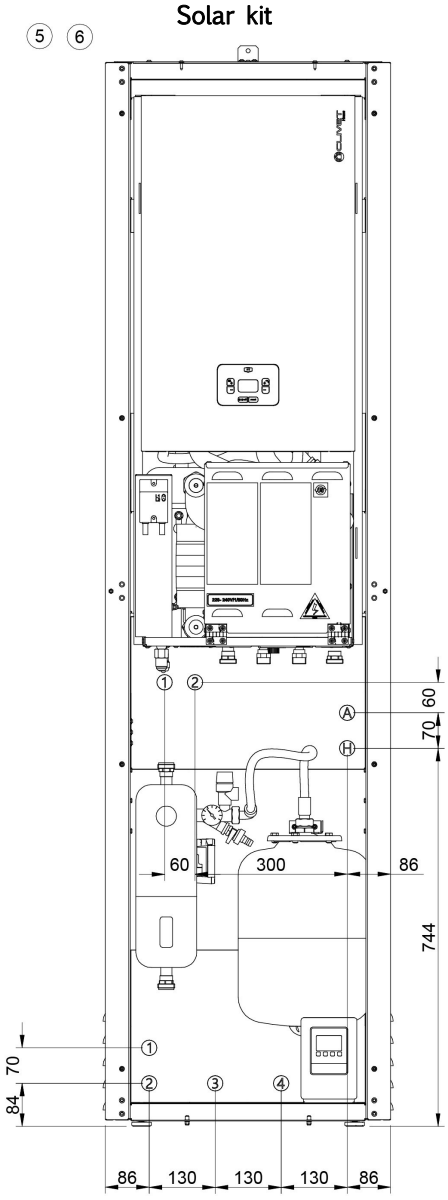
The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T1

STD unit



Solar kit



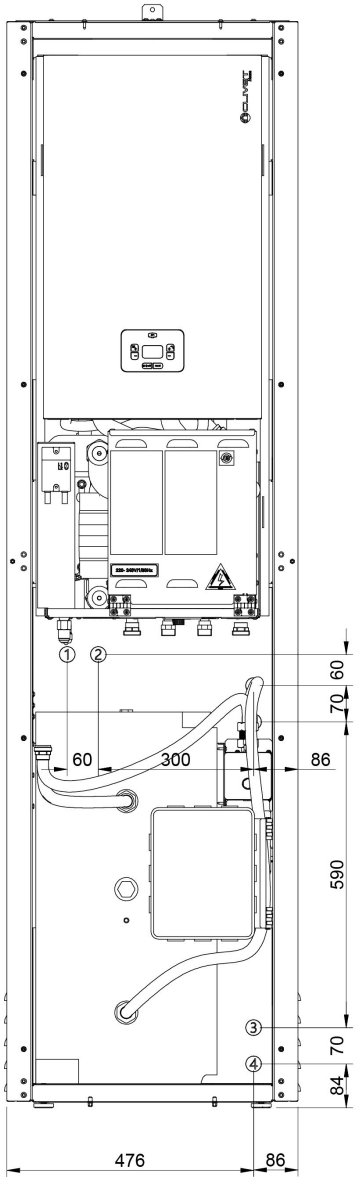
1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"
5. Solar system supply
6. Solar system return

(A) Aqueduct inlet
(H) DHW withdrawal

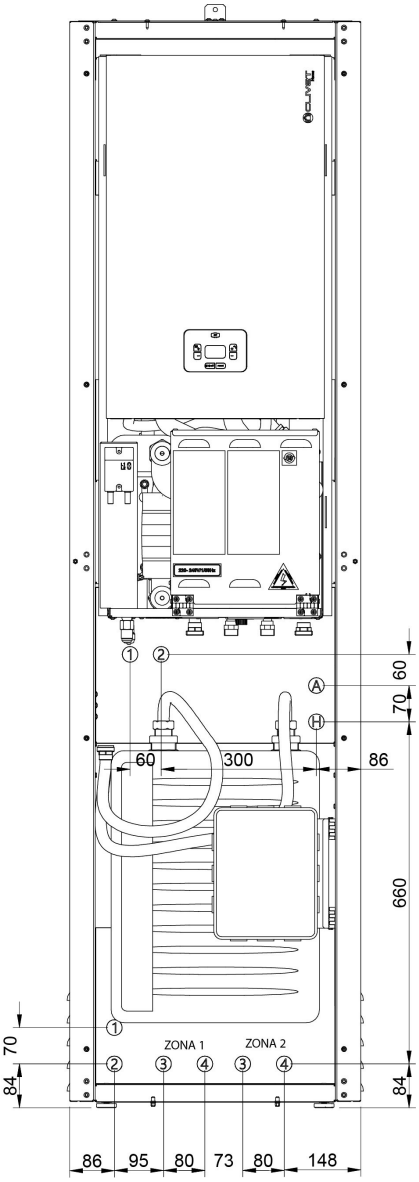
The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T1

Inertial storage tank+ Single zone kit



2-zone booster kit

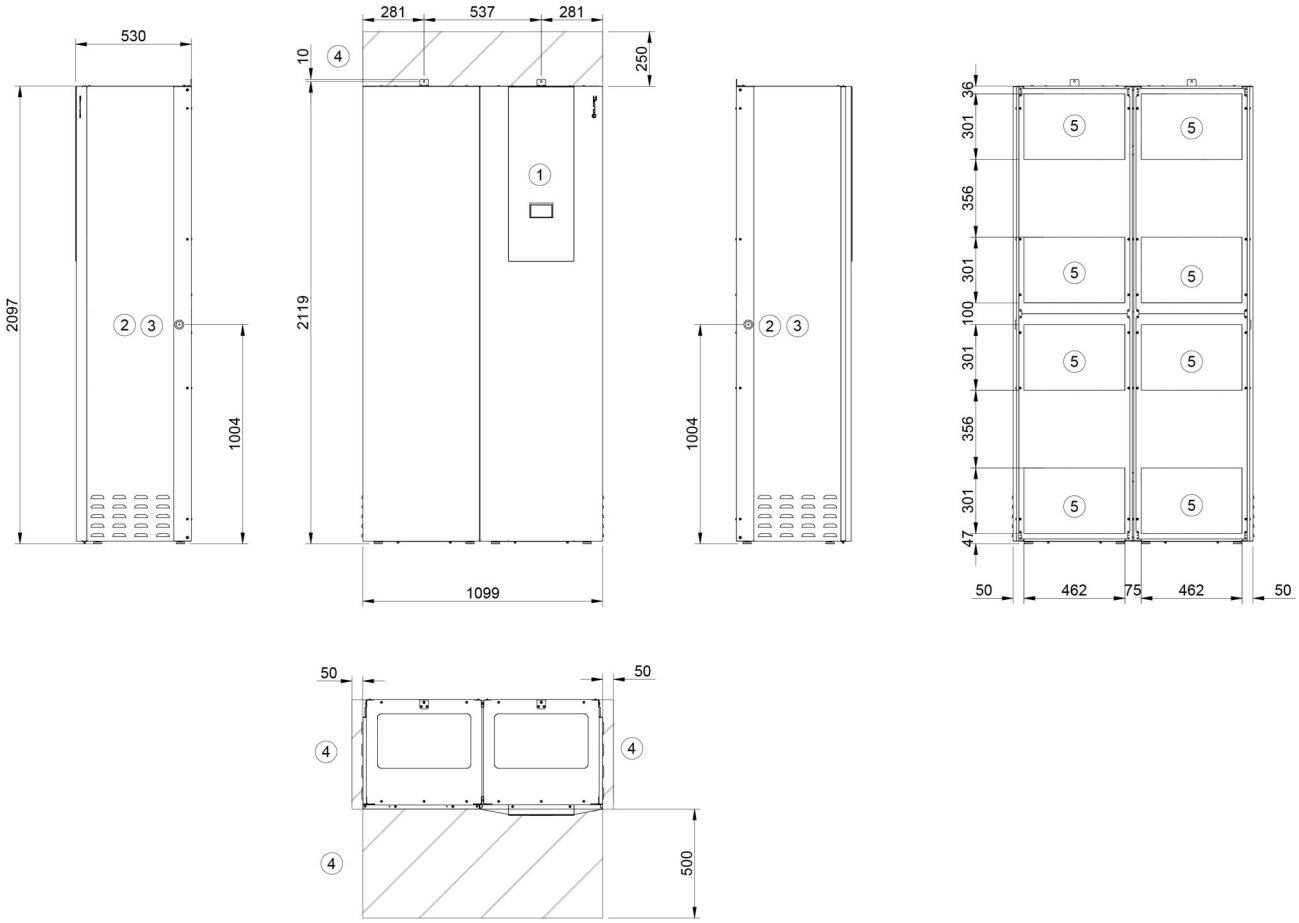


1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"

(A) Aqueduct inlet
(H) DHW withdrawal

The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T2

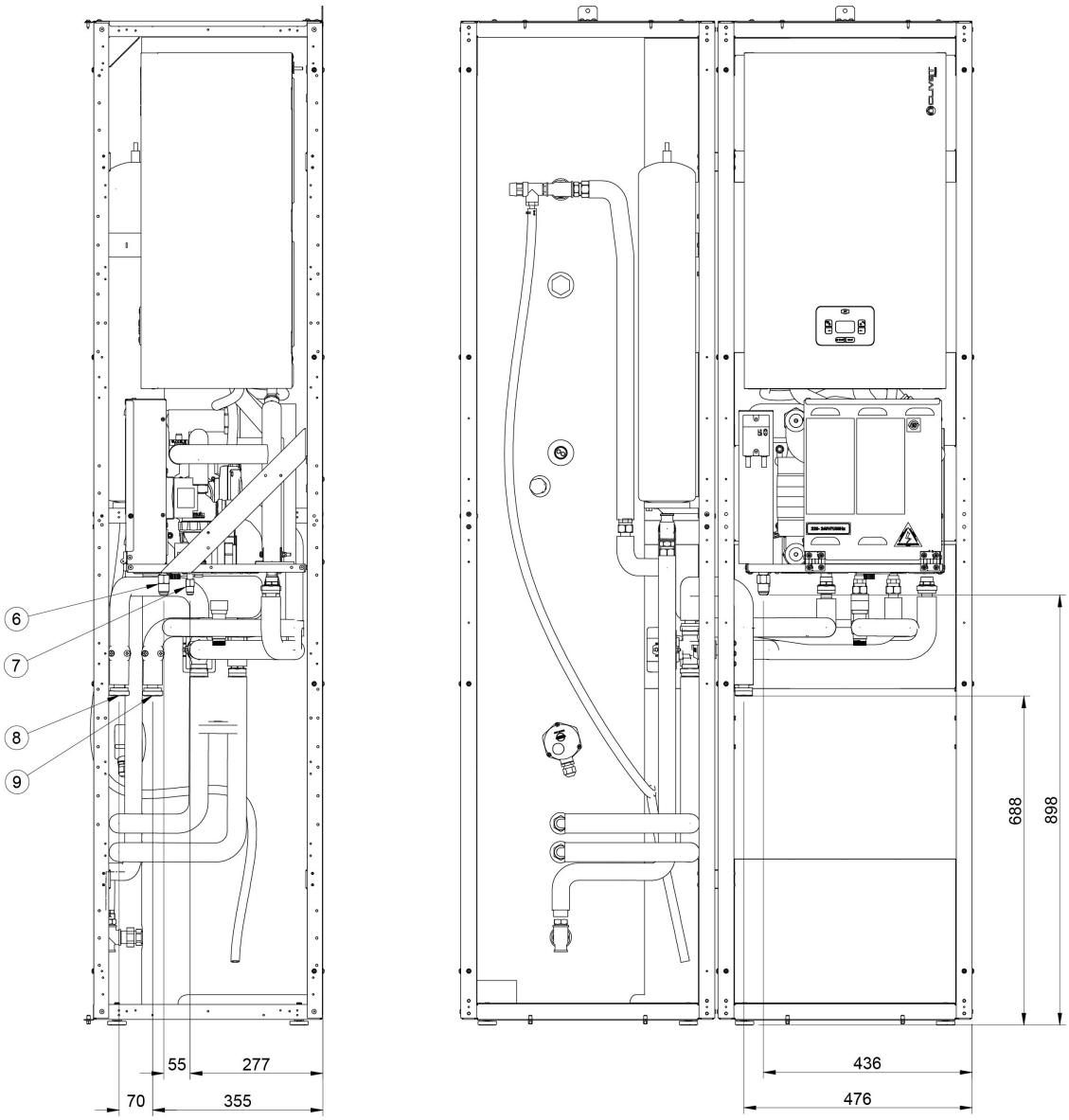


1. Unit control keypad
2. Electric line input
3. Condensate drain
4. Functional clearence
5. Precuts holes

The presence of optional accessories may result in a substantial variation of the reported weights.

Weight distribution			
Code		PEGQ00001+ PEGQ00002	PEGQ00001+ PEGQ00004
Shipping weight	Kg	162 (75+87)	167 (75+92)

SQKN-YEE 1 BH - A-B T2

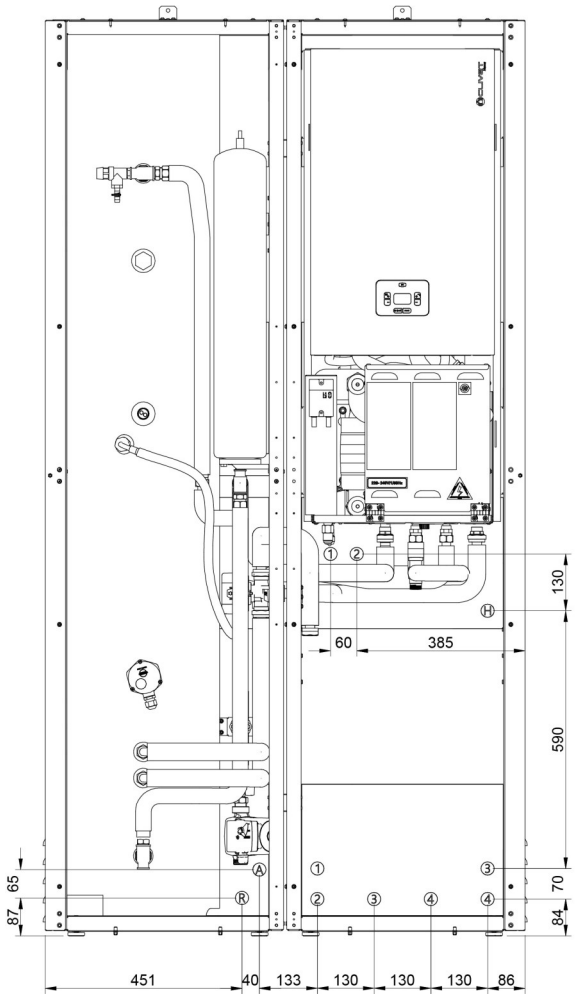


6. Suction line connection GAS M 5/8"
7. Liquid line connection GAS M 3/8"
8. Supply to system F 1"
9. Return to system F1"

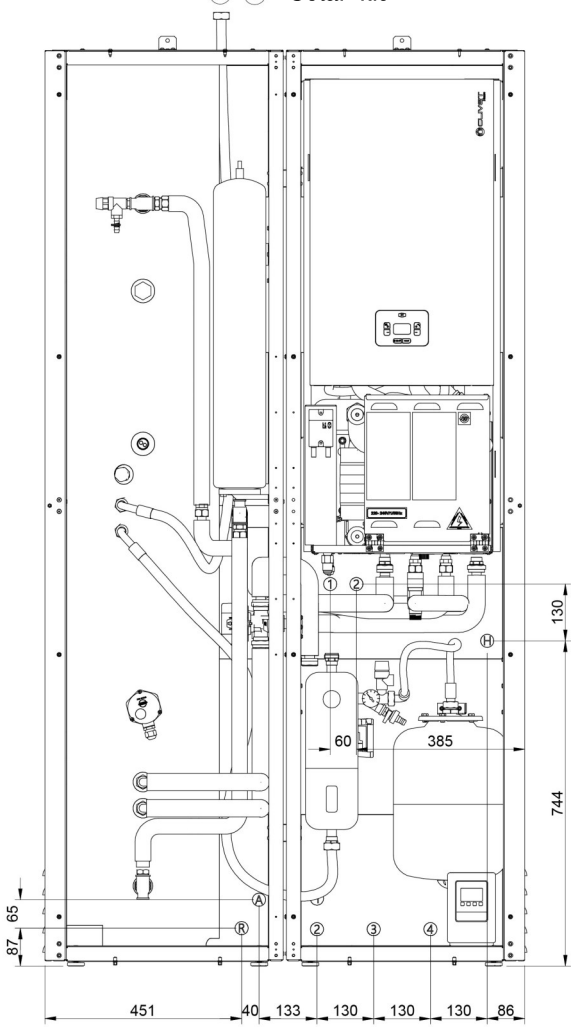
The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T2

Domestic hot water recirculation



5 6 Solar kit



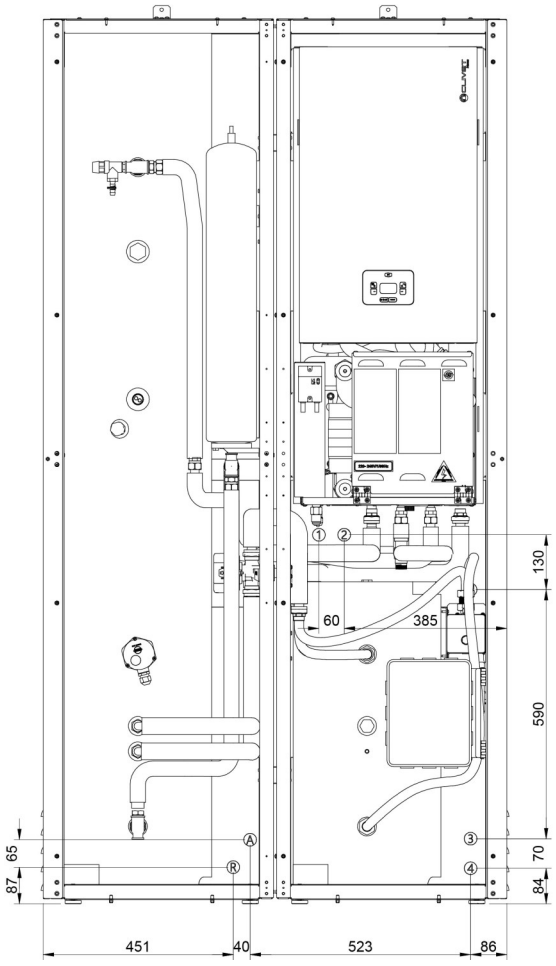
1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"
5. Solar system supply
6. Solar system return

(A) Aqueduct inlet
(R) Domestic hot water recirculation
(H) DHW withdrawal

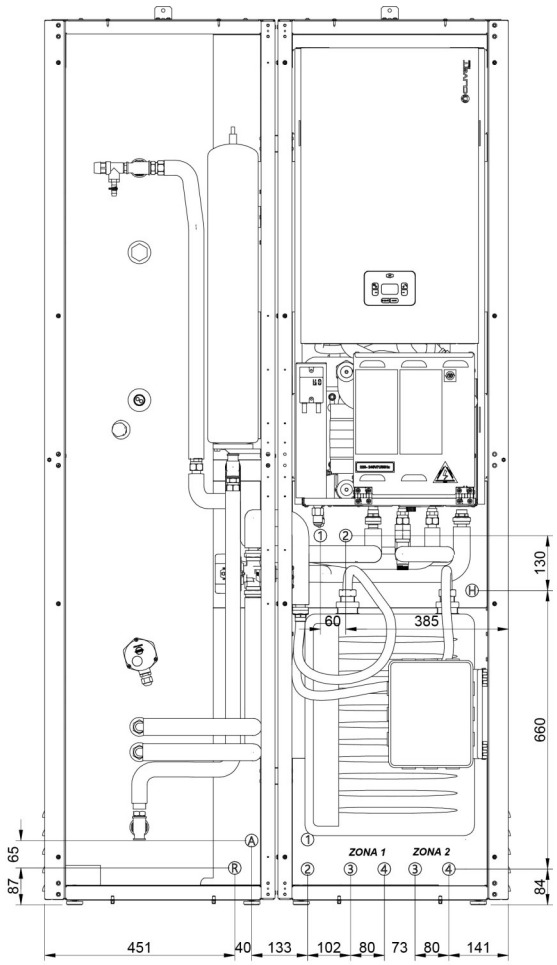
The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T2

Inertial storage tank+ Single zone kit



2-zone booster kit

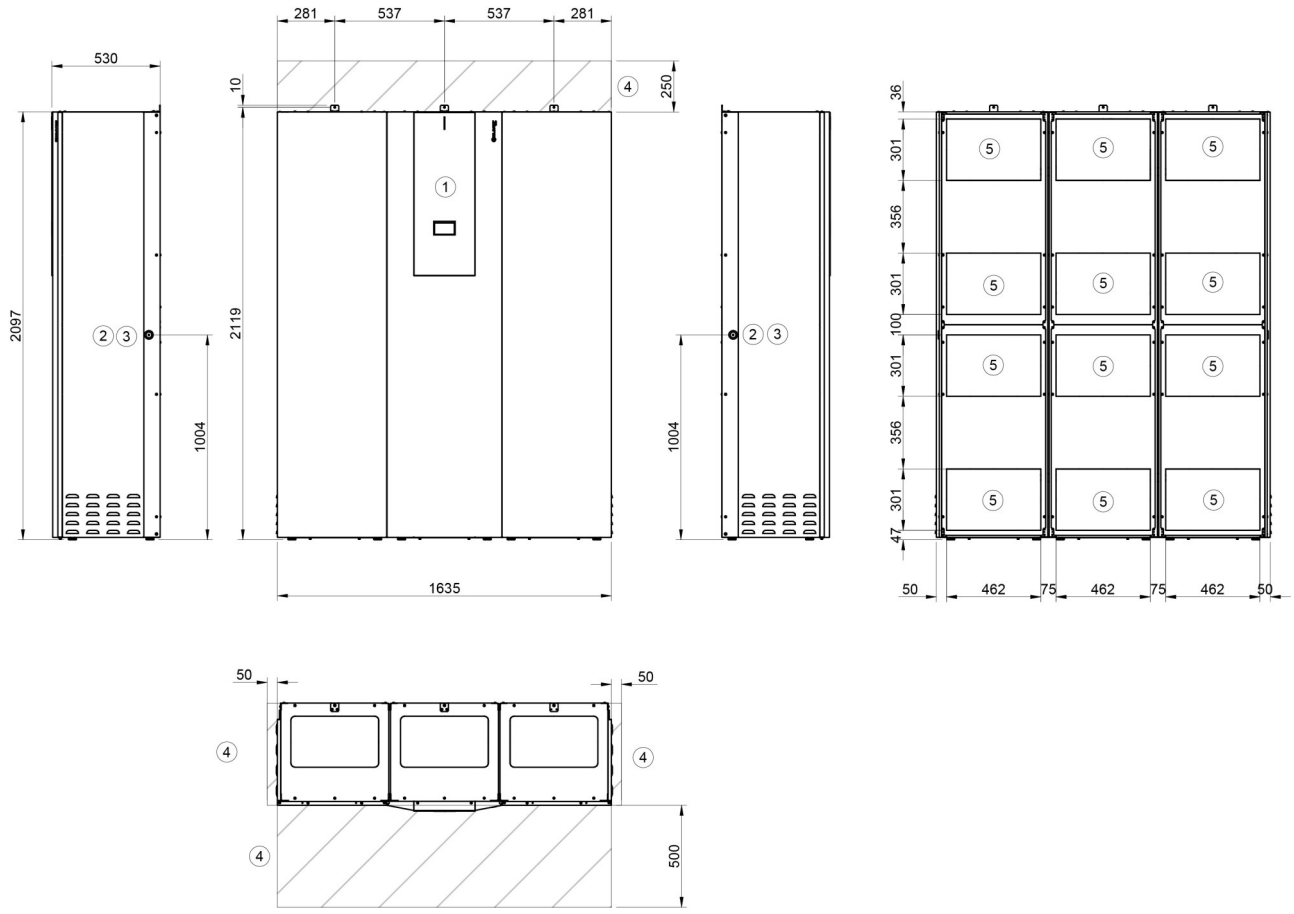


1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"

(A) Aqueduct inlet
(R) Domestic hot water recirculation
(H) DHW withdrawal

The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T3

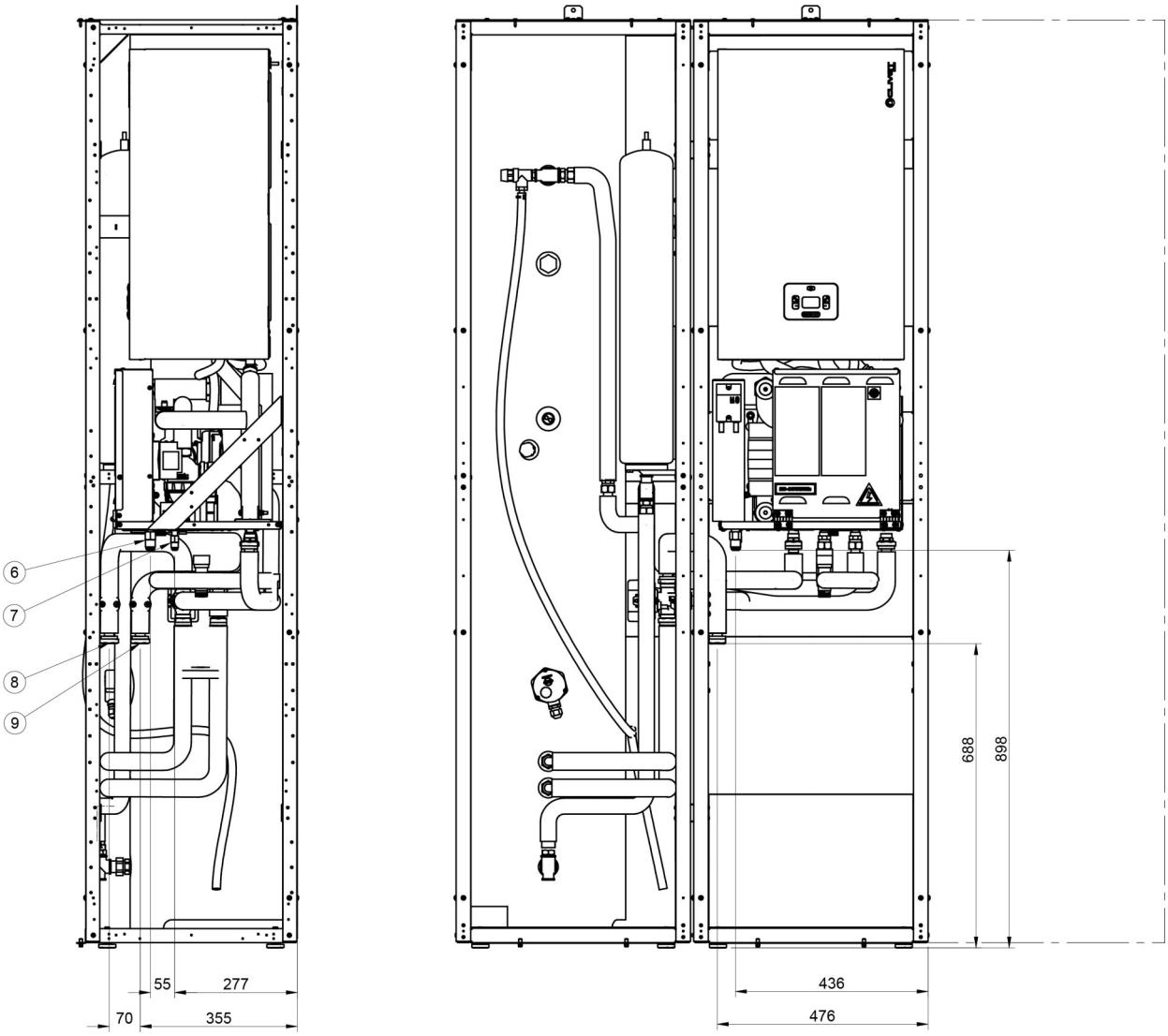


1. Unit control keypad
2. Electric line input
3. Condensate drain
4. Functional clearence
5. Precuts holes

The presence of optional accessories may result in a substantial variation of the reported weights.

Weight distribution			
Code		PEGQ00001+ PEGQ00002+ PEGQ00003	PEGQ00001+ PEGQ00003+ PEGQ00004
Shipping weight	Kg	213 (75+87+51)	218 (75+51+92)

SQKN-YEE 1 BH - A-B T3

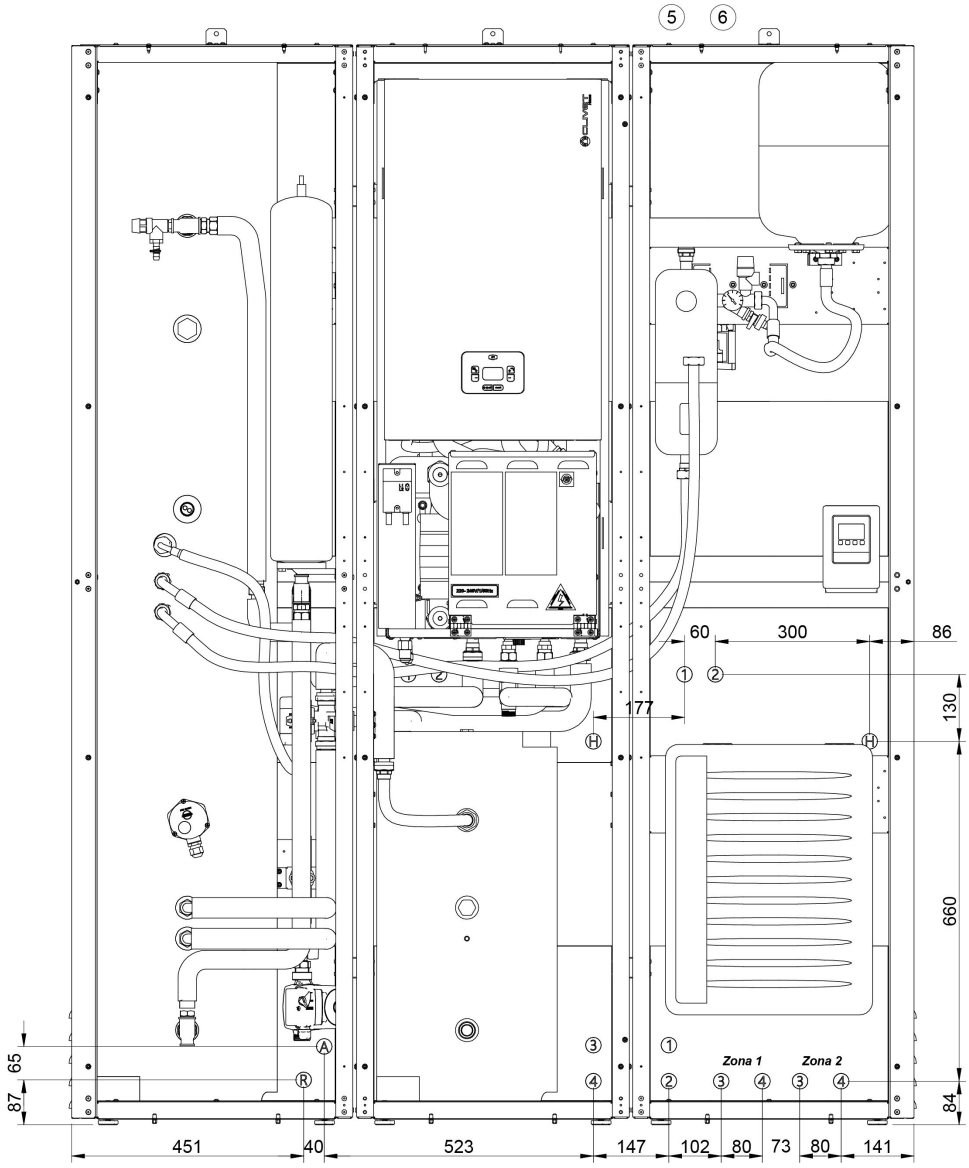


6. Suction line connection GAS M 5/8"
7. Liquid line connection GAS M 3/8"
8. Supply to system F 1"
9. Return to system F1"

The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T3

Inertial storage tank + solar kit + 2-zone booster kit + domestic hot water recirculation

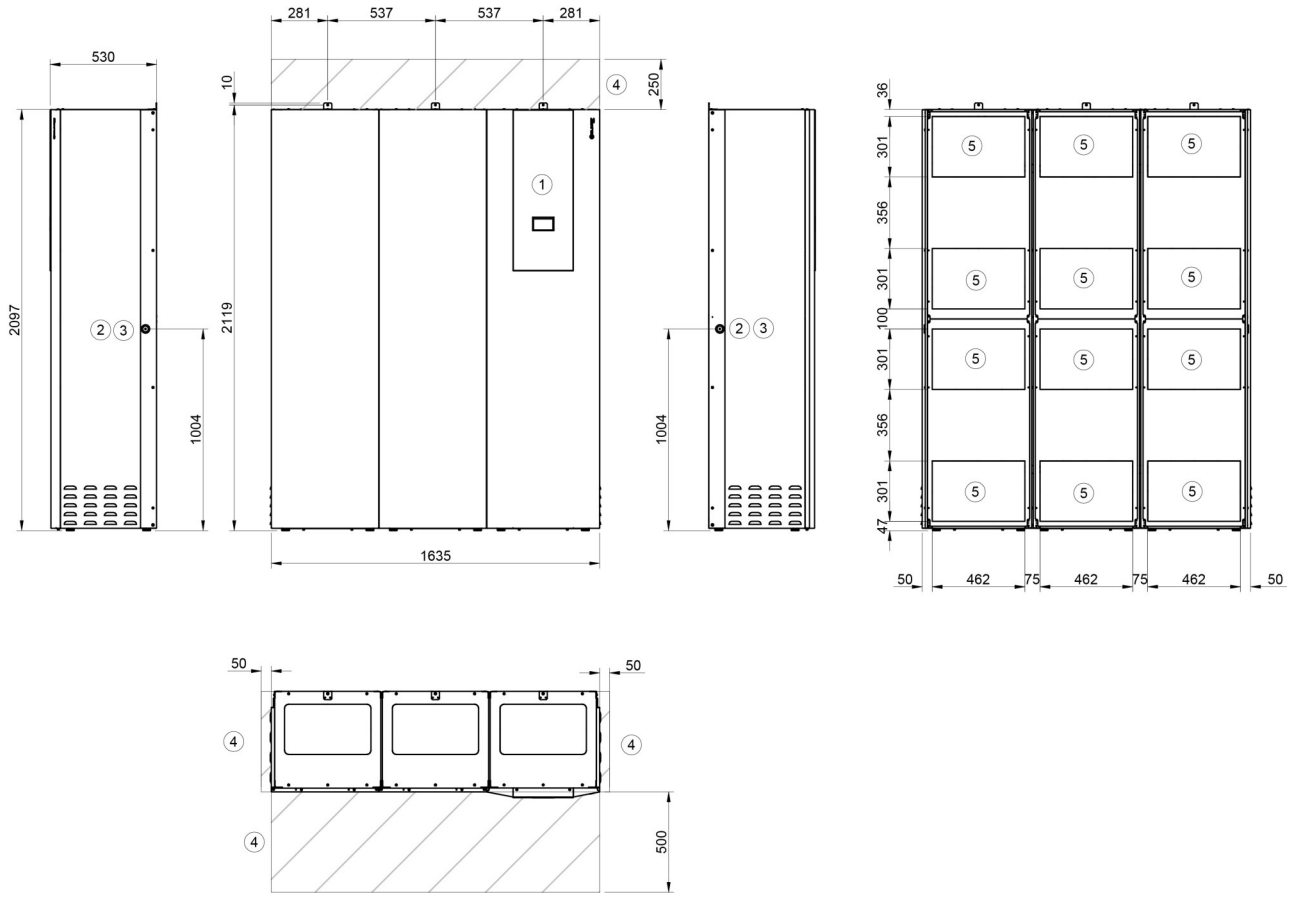


1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"
5. Solar system supply
6. Solar system return

(A) Aqueduct inlet
(R) Domestic hot water recirculation
(H) DHW withdrawal

The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T3 ACC.AGG

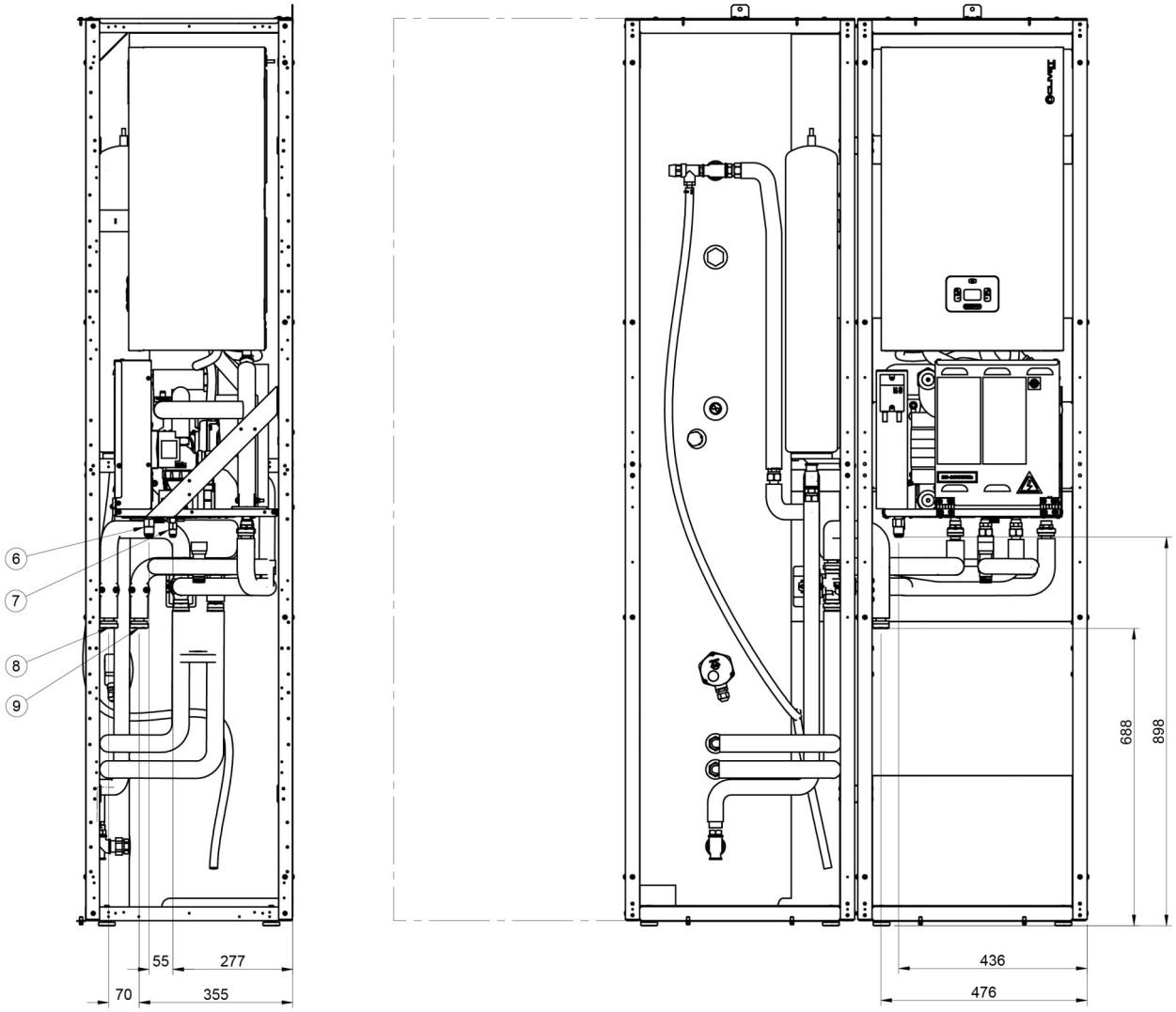


1. Unit control keypad
2. Electric line input
3. Condensate drain
4. Functional clearence
5. Precuts holes

The presence of optional accessories may result in a substantial variation of the reported weights.

Weight distribution			
Code		PEGQ00001+ PEGQ00002+ PEGQ00002	PEGQ00001+ PEGQ00003+ PEGQ00004
Shipping weight	Kg	249 (75+87+87)	254 (75+92+87)

SQKN-YEE 1 BH - A-B T3 ACC.AGG

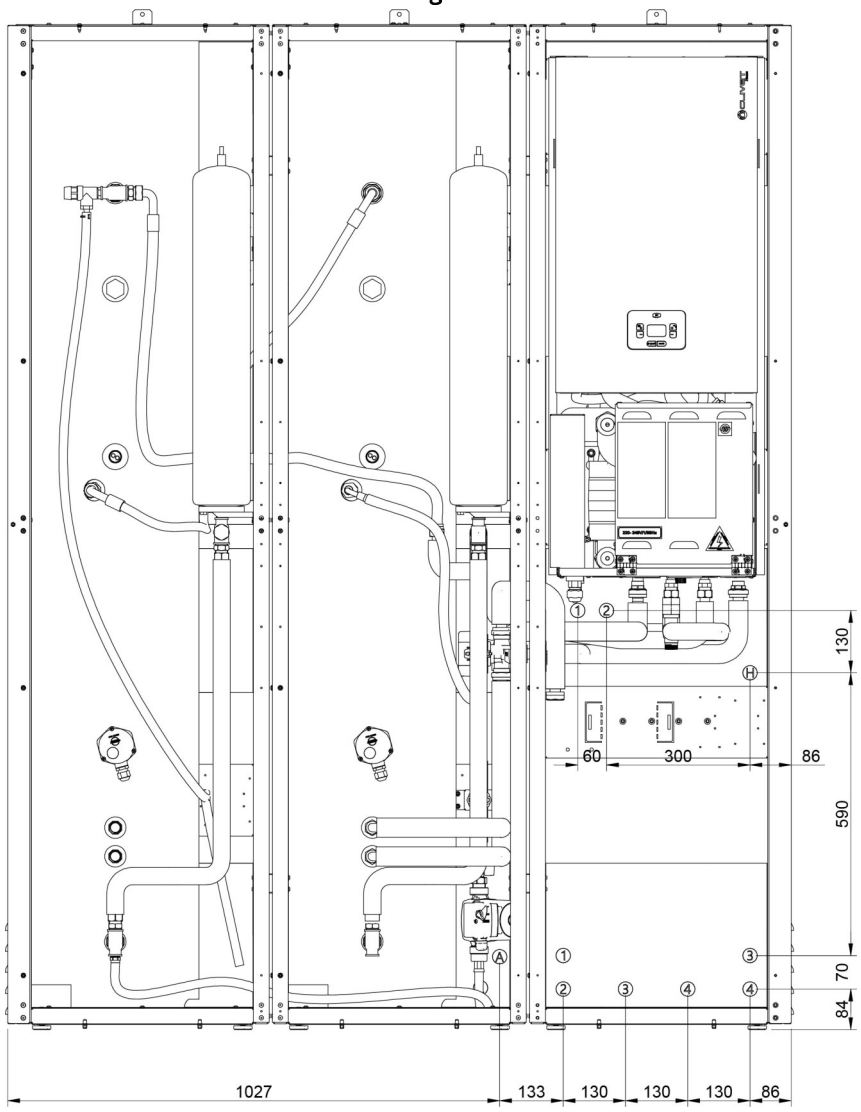


6. Suction line connection GAS M 5/8"
7. Liquid line connection GAS M 3/8"
8. Supply to system F 1"
9. Return to system F1"

The presence of optional accessories may result in a substantial variation of the reported weights.

SQKN-YEE 1 BH - A-B T3 ACC.AGG

Additional storage tank



1. Suction line connection GAS M 5/8"
2. Liquid line connection GAS M 3/8"
3. Supply to system F 1"
4. Return to system F1"

(A) Aqueduct inlet
(R) Domestic hot water recirculation
(H) DHW withdrawal

The presence of optional accessories may result in a substantial variation of the reported weights.

General techinacal data

Size			A+2.1		A+3.1		A+4.1		A+5.1		B+6.1*	C+7.1*	D+8.1*
Heating													
Air 7°C - Water 35°C													
Nominal heating capacity / max	1	kW	4,32/6,26		6,18/7,41		8,30/9,11		10,09/10,3		12,13/14,60	14,51/15,5	16,01/16,80
Total power input	1	kW	0,80		1,19		1,56		2,01		2,42	3,09	3,52
COP	1	-	5,42		5,21		5,31		5,01		5,00	4,70	4,55
Water flow-rate	1	l/s	0,21		0,30		0,41		0,49		0,57	0,67	0,75
Nominal available pressure	1	kPa	31,2		36,5		33,1		31,0		25,7	31,7	22,6
Maximum available pressure	1	kPa	69	95	62	90	47	83	31	76	70	55	39
Air -7°C - Water 35°C													
Nominal heating capacity / max	2	kW	4,17/6,25		6,05/6,97		7,33/8,35		8,20/9,30		10,49/13,85	12,23/14,09	13,43/14,33
Total power input	2	kW	1,32		2,01		2,27		2,67		3,36	4,33	4,90
COP	2	-	3,16		3,00		3,23		3,07		3,13	2,82	2,74
Water flow-rate	2	l/s	0,22		0,29		0,34		0,40		0,56	0,62	0,70
Nominal available pressure	2	kPa	35,0		39,8		34,0		31,7		65,8	63,1	47,7
Maximum available pressure	2	kPa	69	94	64	91	58	88	49	84	71	63	49
Air 7°C - Water 45°C													
Nominal heating capacity / max	3	kW	4,16/5,96		6,03/7,13		8,22/8,98		10,01/10,30		12,30/14,50	14,00/15,70	16,01/16,60
Total power input	3	kW	1,06		1,57		2,08		2,59		3,24	3,84	4,45
COP	3	-	3,93		3,83		3,95		3,86		3,80	3,65	3,60
Water flow-rate	3	l/s	0,19		0,30		0,39		0,49		0,60	0,67	0,76
Nominal available pressure	3	kPa	32,3		36,4		34,9		31,0		51,6	41,8	21,7
Maximum available pressure	3	kPa	70	95	63	90	51	85	31	76	65	55	38
Air 7°C - Water 55°C													
Nominal heating capacity / max	4	kW	4,08/5,74		5,94/6,90		7,50/7,80		9,60/9,72		12,07/13,90	13,85/14,50	16,00/16,20
Total power input	4	kW	1,36		1,93		2,35		3,10		3,89	4,53	5,52
COP	4	-	3,00		3,07		3,19		3,10		3,10	3,05	2,90
Water flow-rate	4	l/s	0,12		0,18		0,23		0,29		0,36	0,41	0,48
Nominal available pressure	4	kPa	35,6		33,4		31,2		33,6		14,1	16,5	17,4
Maximum available pressure	4	kPa	70	98	70	96	69	94	63	91	90	105	80
Cooling													
Air 35°C - Water 18°C													
Nominal cooling capacity / max	5	kW	4,55/6,88		6,44/7,65		8,10/11,13		10,00/12,03		12,06/15,02	13,79/15,30	14,84/16,38
Total power input	5	kW	0,75		1,23		1,58		2,10		3,00	3,73	4,07
EER	5	-	6,08		5,24		5,12		4,77		4,02	3,70	3,65
Water flow-rate	5	l/s	0,22		0,32		0,38		0,48		0,60	0,63	0,71
Nominal available pressure	5	kPa	34,9		34,8		34,6		10,6		13,1	16,3	15,1
Maximum available pressure	5	kPa	69	94	61	89	51	85	32	76	65	61	48
Air 35°C - Water 7°C													
Nominal cooling capacity / max	6	kW	4,26/6,14		6,25/6,39		7,46/7,94		9,10/8,67		11,80/11,16	12,86/11,72	14,2012,88
Total power input	6	kW	1,22		2,02		2,24		2,94		4,29	5,04	5,80
EER	6	-	3,50		3,09		3,33		3,09		2,75	2,55	2,45
Water flow-rate	6	l/s	0,20		0,29		0,36		0,43		0,54	0,59	0,64
Nominal available pressure	6	kPa	35,8		36,1		34,3		36,8		18,1	20,3	25,1
Maximum available pressure	6	kPa	70	95	64	91	56	87	43	82	74	67	60

1 User side entering/leaving water temperature 30/35 °C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018
2 User side entering/leaving water temperature 30/35 °C, source side air -7°C Heat power data, Total power input and COP in accordance with EN 14511:2018
3 User side entering/leaving water temperature 40/45 °C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018
4 User side entering/leaving water temperature 18/23 °C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018
5 User side entering/leaving water temperature 7/12 °C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018
6 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, High Temperature 47/55°C

* All data calculated with zero height difference and equivalent length of 7m.

SIZE			A+2.1	A+3.1	A+4.1	A+5.1	B+6.1*	C+7.1*	D+8.1*
ErP									
Average climate conditions - Heat pumps for High temperature applications									
Nominal power	7	kW	4	6	7	9	12	13	13
SCOP	7	-	3.32	3.54	3.72	3.73	3.56	3.52	3.48
Generator energy class	7	-	A++	A++	A++	A++	A++	A++	A++
ηs	7	%	130	138	146	146	139	138	136
System energy class	7	-	A++	A++	A++	A++	A++	A++	A++
ηs	7	%	135	143	151	151	144	143	141
Average climate conditions - Heat pumps for Low temperature applications									
Nominal power	8	kW	5	6	8	10	12	14	16
SCOP	8	-	5,13	5,15	5.32	5.27	5.00	4.91	4.89
Generator energy class	8	-	A+++	A+++	A+++	A+++	A+++	A+++	A+++
ηs	8	%	202	203	210	208	196	193	193
System energy class	8	-	A+++	A+++	A+++	A+++	A+++	A+++	A+++
ηs	8	%	207	208	215	213	201	198	198
Average climate conditions - Heat pump for fan coil applications									
Nominal power	9	kW	4	6	7	9	12	13	14
SEER	9	-	5,09	5,42	5.95	6.01	5.16	5.10	4.87
Generator energy class	9	-	A+++	A+++	A+++	A+++	A+++	A+++	A+++
ηs	9	%	201	214	235	238	203	201	192
Heat pump for domestic hot water applications									
Declared load profile	10	-	L	XL	L	XL	L	XL	L	XL	XL	XL	XL
ηwh	10	%	120	123	120	123	116	125	116	125	124	124	124
Domestic Hot Water Energy Class	10	-	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+

7 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, High Temperature 47/55°C
8 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, Low Temperature 30/35°C
9 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, Clima Average, Low temperature 12/7°C
10 Data in accordance: EN 16147:2017

* All data calculated with zero height difference and equivalent length of 7m.

Construction - Outdoor unit

Size			2.1	3.1	4.1	5.1	6.1	7.1	8.1
Characteristics									
Compressor			Twin Rotary						
Refrigerant			R32						
Refrigerant charge		kg	1.50	1.50	1.65	1.65	1.84	1.84	1.84
GWP		t_{CO2}	675	675	675	675	675	675	675
Equivalent tons of CO_2 (*)		t_t	1.02	1.02	1.11	1,11	1.24	1.24	1.24
Oil charge		l	0,46	0,46	0,46	0,46	1,10	1,10	1,10
Type of fan			Axial fan						
Nominal air flow		m^3/h	2770	2770	4030	4030	4060	4060	4060
Outdoors unit sound pressure at 1 metre	1	dB(A)	42	44	45	47	50	51	53
Sound power	1	dB(A)	55	57	58	60	63	64	66
Dimensions									
Operating (L x P x A)		mm	1008x426x 712	1008x426x 712	1118x523x 865	1118x523x 865	1118x523x 865	1118x523x 865	1118x523x 865
Package (L x P x A)		mm	1065x485x 800	1065x485x 800	1180x560x 890	1180x560x 890	1180x560x 890	1180x560x 890	1180x560x 890
Operation weight 230M / 400TN	2	kg	58	58	77	77	96/112	96/112	96/112
Shipping weight 230M / 400TN	2	kg	64	64	88	88	110/125	110/125	110/125

1 Sound pressure level determined using the intense metric method (UNI EN ISO 9614-2). Data referred to the following full load conditions: Heating - utility side water inlet/outlet 47/55°C, air source side 7°C. Cooling - utility side water inlet/outlet 12/7°C, air source side 35°C.

2 Power supply 220-240V ~ 50Hz / Power supply 380-415V 3N~ 50Hz

(*) It contains fluorinated greenhouse gases.

Construction - Indoor unit

Size			A	B
System characteristics				
Maximum circuit pressure		bar	3,0	3,0
System expansion tank	1	l	8,0	8,0
Expansion vessel pre-charge		bar	1,0	1,0
System water connections		inch	1''	1''
System water connections		inch	3/4”	3/4”
Dimensions				
Operating (L x P x A)		mm	108x450x410	108x450x410
Package (L x P x A)		mm	1180x500x560	1180x500x560
Operation weight		kg	70	81
Shipping weight		kg	42	44

1 Sufficient volume up to a maximum of 60 litres of system water content.

Hydraulic data - Indoor unit + Outdoor unit

Size			2.1	3.1	4.1	5.1	6.1	7.1	8.1
Characteristics			A	A	A	A	B	B	B
Minimum system water content	1	l	40	40	40	40	60	60	60
Minimum admitted water flow rate		l/s	0,16	0,16	0,16	0,16	0,16	0,16	0,16
Maximum admitted water flow rate		l/s	0,61	0,61	0,61	0,61	0,92	0,92	0,92

1 Consider the water content of the area with less volume

Sound levels outdoor unit

Standard mode

SIZE	Sound power level								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
2.1	46	49	49	52	52	46	37	27	42	55
3.1	49	48	50	55	53	48	39	30	44	57
4.1	36	51	53	56	55	49	44	30	45	58
5.1	37	56	53	57	57	51	47	36	47	60
6.1	44	53	54	60	58	55	52	51	50	63
7.1	44	54	55	60	59	57	56	54	51	64
8.1	46	58	57	60	61	59	54	51	53	66

Sound levels refer to units with full load under nominal test conditions. Data referred to the following conditions:
entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

Silenced mode

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
2.1	40	53
3.1	40	53
4.1	42	55
5.1	42	55
6.1	46	59
7.1	47	60
8.1	48	61

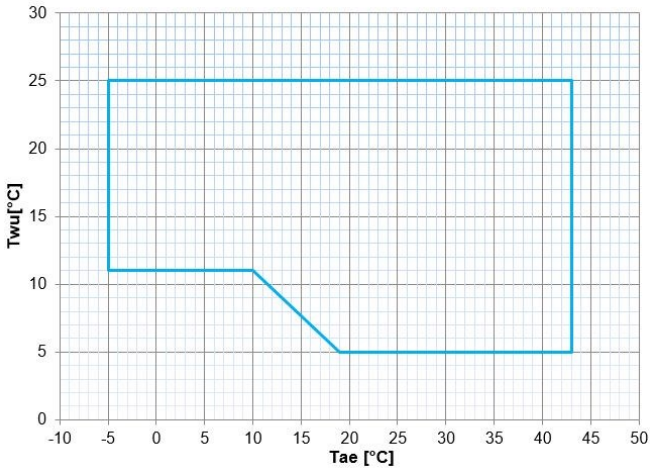
Sound levels refer to units with full load under nominal test conditions. For maximum capacity delivered in silent mode use a correction factor of 0.8.
Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

Super-silenced mode

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
2.1	37	50
3.1	38	51
4.1	39	52
5.1	39	52
6.1	41	54
7.1	41	54
8.1	41	54

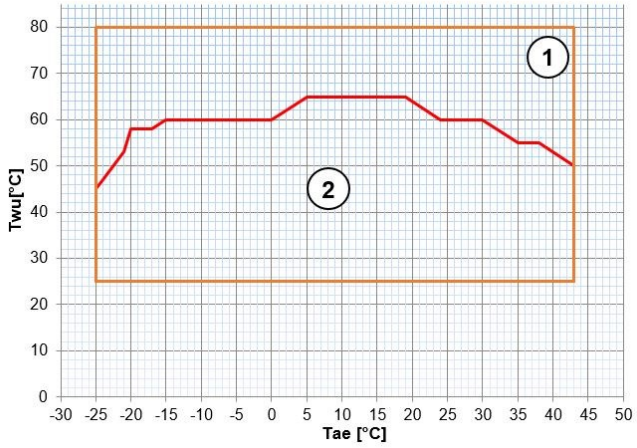
Sound levels refer to units with full load under nominal test conditions. For maximum capacity delivered in silent mode use a correction factor of 0,6
Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

Operational limits - Cooling



Twu [°C] = Exchanger water outlet temperature
Tae [°C] = Outdoors exchanger air inlet temperature
1 Normal operating range

Operational limits - Heating



Twu [°C] = Exchanger water outlet temperature
Tae [°C] = Outdoors exchanger air inlet temperature

1 Operating range with boiler
2 Operating range with heat pump only

In the configuration with electrical integration resistance, the limits vary according to the electrical power of the chosen resistance.

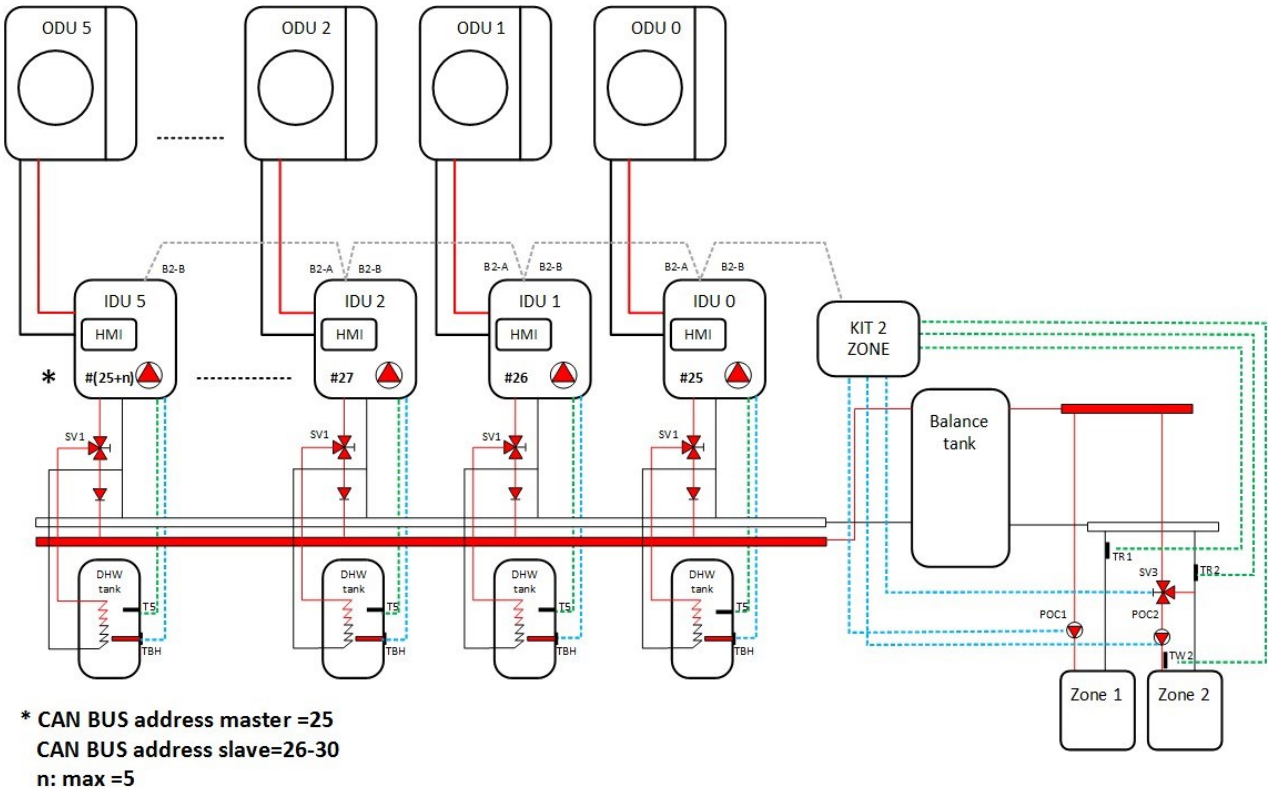
Operational limits - DHW

Twu [°C] = Exchanger water outlet temperature
Tae [°C] = Outdoors exchanger air inlet temperature

1 Operating range with boiler
2 Operating range with heat pump only - storage tank and 3-way DHW valve required

In the configuration with electrical integration resistance, the limits vary according to the electrical power of the chosen resistance.

Cascade operation allows up to 6 units to be connected in parallel, thereby ensuring that the system is fully reliable and efficient. The Master unit controls and displays the parameters of the entire system on its User Interface, activating the Slave units when its capacity is not enough to fulfil the system load



IDU 0	Master (indoor unit)
IDU 1...	Slave (max 5 indoor units)
ODU 0 ...	Outdoor units
HMI	Unit keypad
KIT 2 Zone	2-zone temperature management kit (connected to the master)
SV1	3-way system DHW valve (indoor unit)
T5	DHW temperature probe
DHW Tank	DHW tank
TBH	DHW backup heater (electric heater)
Balance tank	Inertial tank
SV3	Zone 2 mixing valve (low temperature)
POC1	Zone 1 pump
POC2	Zone 2 pump
TR1	Zone 1 return temperature probe
TW2	Zone 2 supply temperature probe
TR2	Zone 2 return temperature probe
Zona 1	Fan coil
Zona 2	Underfloor heating

Cooling, Heating and DHW logic

The Master-Slave function (cascade) logic of several units enables management of the following controls

- ON/OFF controls
- HEAT/COOL control
- System setpoint
- compressor rotation for system side wear
- in DHW mode, each unit can manage its own DHW tank independently if the relevant parameter is enabled. The DHW setpoint is managed independently by the unit.

The Master unit can operate in Cooling / Heating / DHW / AUTO mode.

The Slave units can operate in Cooling / Heating mode and each unit can manage DHW independently.

In AUTO mode, the Master unit decides how to operate based on its T4 probe (outdoor temperature) and transmits the signal to the Slave units.

The 3-way valve and the DHW tank must be installed in the pipe of the Master or slave units that have DHW operation enabled. All units always allow the instantaneous operation of DHW production with boiler

All units are each connected to their own boiler (DHW) which is managed based on demand.

Rotation and back-up.

The system counts the hours of operation of the compressor for all the units (including the main one).

When the system is started, the units with the shortest operating time have priority to start. This way the system rotates the operation of all the units in order to ensure they are used evenly.

In the event of a unit malfunction, the Master unit is set up to activate the next one and ensure continuity of operation.

⇒ *Note: the Master unit is included in the rotation logic, but cannot have a backup.*

Master unit cascade activation:

P117_CanAddress = 25 (note that single units must also have 25 as an address, otherwise any secondary board will not work)

P211_NMachine > 0 enables cascade management on the master (obviously a value of 1 would not make any sense)

Slave unit cascade activation:

P117_CanAddress = 26, 27, etc. up to 30 for a maximum of 5 slave units (a total of 6 units in cascade)

P211_NMachine = 0 (should be kept at 0)

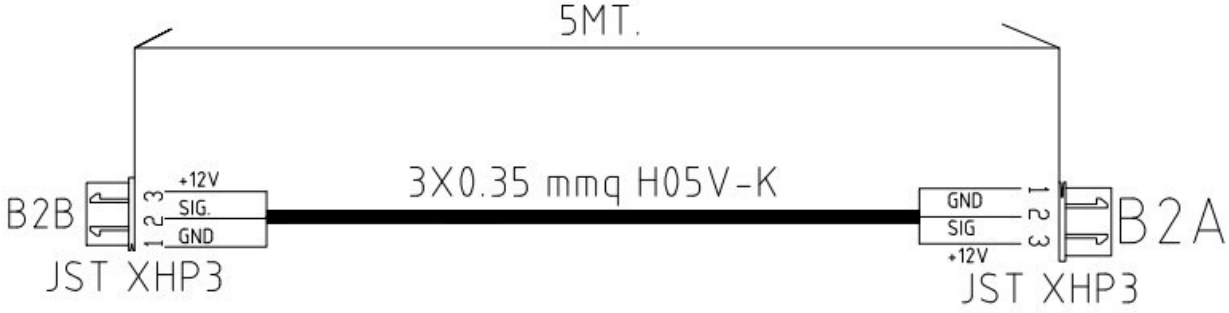
Each unit can manage one DHW tank. DHW management is independent for each unit.

⇒ *NOTE: Slave units cannot be fitted with a booster board (kit 2 zone)*

Connection between the units

To connect the units together, use wiring C95900079 – Cable kit for cascade connection of Sphera Easy Hybryd units.

The connection is made from connector B2-A to connector B2-B



Modello info prodotto /Product info template

Information requirements for heat pump space heaters and heat pump combination heaters.
Informazioni obbligatorie per gli apparecchi a pompa di calore per il riscaldamento d'ambiente
e gli apparecchi di riscaldamento misti a pompa di calore

Model(s): / Modelli:	***aa***
Air-to-water heat pump: / Pompa di calore aria/acqua:	***ab***
Water-to-water heat pump: / Pompa di calore acqua/acqua:	***ac***
Brine-to-water heat pump: / Pompa di calore salamoia/acqua:	***ad***
Low-temperature heat pump: / Pompa di calore a bassa temperatura:	***ae***
Equipped with a supplementary heater: / Con riscaldatore supplementare:	***af***
Heat pump combination heater: / Apparecchio misto a pompa di calore:	***ag***

Heat pump combination heater: / Apparecchio misto a pompa di calore:
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application. /
I parametri sono dichiarati per l'applicazione a temperatura media, tranne per le pompe di calore a bassa temperatura Per le pompe di calore a bassa temperatura, i parametri sono dichiarati per l'applicazione a bassa temperatura.

Parameters shall be declared for average climate conditions. /
I parametri sono dichiarati per condizioni climatiche medie.

Item / Elemento	Symbol / Simbolo	Value / Valore	Unit / Unità	Item / Elemento	Symbol / Simbolo	Value / Valore	Unit / Unità
Rated heat output (*) / Potenza termica nominale (*)	*Prated*	***ah***	kW	Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente	ηs	***ai***	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj / Capacità di riscaldamento dichiarata a carico parziale, con temperatura interna pari a 20 °C e temperatura esterna Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj / Coefficiente di prestazione dichiarato o indice di energia primaria per carico parziale, con temperatura interna pari a 20 °C e temperatura esterna Tj			
Tj = - 7 °C	*Pdh*	***aj***	kW	*Tj = - 7 °C*	*COPd*	***at***	-
Tj = + 2 °C	*Pdh*	***ak***	kW	*Tj = + 2 °C*	*COPd*	***au***	-
Tj = + 7 °C	*Pdh*	***al***	kW	*Tj = + 7 °C*	*COPd*	***av***	-
Tj = + 12 °C	*Pdh*	***am***	kW	*Tj = + 12 °C*	*COPd*	***aw***	-
Tj = bivalent temperature / Temperatura bivalente	*Pdh*	***an***	kW	Tj = bivalent temperature / Temperatura bivalente	*COPd*	***ax***	-
Tj = operation limit temperature / temperatura limite di esercizio	*Pdh*	***ao***	kW	Tj = operation limit temperature / temperatura limite di esercizio	*COPd*	***ay***	-
For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)	*Pdh*	***ap***	kW	For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)	*COPd*	***az***	-
Bivalent temperature / Temperatura bivalente	*Tbiv*	***aq***	°C	For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio	*TOL*	***ba***	°C
Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento	*Pcych*	***ar***	kW	Cycling interval efficiency / Efficienza della ciclicità degli intervalli	*COPcych*	***bb***	-
Degradation co-efficient (**) / Coefficiente di degradazione (**)	*Cdh*	***as***	-	Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua	*WTOL*	***bc***	-

Power consumption in modes other than active mode / Consumo energetico in modi diversi dal modo attivo				Supplementary heater / Riscaldatore supplementare			
Off mode / Modo spento	*POFF*	***bd***	kW	Rated heat output (*) / Potenza termica nominale (*)	*Psup*	***bh***	kW
Thermostat-off mode / Modo termostato spento	*PTO*	***be***	kW				
Standby mode / Modo stand-by	*PSB*	***bf***	kW	Type of energy input / Tipo di alimentazione energetica	***bi***		
Crankcase heater mode / Modo riscaldamento del carter	*PCK*	***bg***	kW				
Other items / Altri elementi							
Capacity control / Controllo della capacità		***bj***		For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno	-	***bm***	m3/h
Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno	*LWA*	***bk***	dB(A)	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno	-	***bn***	m3/h
Annual energy comsumption / Consumo energetico annuo	*QHE*	***bl***	kWh				
For heat pump combination heater: / Per gli apparecchi di riscaldamento misti a pompa di calore:							
Declared load profile / Profilo di carico dichiarato	***bo***			Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua	*ηwh*	***bq***	-
Daily electricity consumption / Consumo quotidiano di energia elettrica	*Qelec*	***bp***	kWh	Daily fuel consumption / Consumo quotidiano di combustibile	*Qfuel*	***br***	kWh
Annual electricity consumption / Consumo annuo di energia elettrica	*AEC*	***bs***	kWh	Annual fuel consumption / Consumo annuo di combustibile	*AFC*	***bt***	GJ
Contact details: / Recapiti:	CLIVET SPA - VIA CAMP LONC, 25 - Z.I. VILLAPAIERA - 32032 FELTRE (BL) - ITALY						

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).
(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9. /
(*) Per gli apparecchi a pompa di calore per il riscaldamento d'ambiente e gli apparecchi di riscaldamento misti a pompa di calore, la potenza termica nominale Pnominale è pari al carico teorico per il riscaldamento Pdesignh e la potenza termica nominale di un riscaldatore supplementare Psup è pari alla capacità supplementare di riscaldamento sup(Tj).
(**) Se Cdh non è determinato mediante misurazione, il coefficiente di degradazione è Cdh = 0,9.

Product fiche: combination heaters Scheda prodotto: apparecchi di riscaldamento misti			
SERIES / Serie			***ca***
Model / Modello	1	-	***cb***
Size / Grandezza	2	-	***cc***
Medium-temperature application / Applicazione a media temperatura	3	°C	***cd***
Low-temperature application / Applicazione a bassa temperatura	4	°C	***ce***
DHW profile / Profilo ACS	5	-	***cf***
Medium-temperature class / Classe a media temperatura	6	-	***cg***
Low-temperature class / Classe a bassa temperatura	7	-	***ch***
DHW class / Classe ACS	8	-	***ci***
Ptn	9	kW	***cj***
Qhe_ambiente	10	kWh	***ck***
Qhe_acs	11	kWh	***cl***
ηs	12	%	***cm***
ηs_wh	13	%	***cn***
LwA_in	14	dB	***co***
FOM	15	-	***cp***
Precautions / Precauzioni	16	See installation and operating manual / Vedi manuale di uso e manutenzione	
P th_colder	17	kW	***cq***
P th_warmer	18	kW	***cr***
Q HE_colder	19	kWh	***cs***
Q HE_warmer	20	kWh	***ct***
Q HE_colder_wh	21	kWh	***cu***
Q HE_warmer_wh	22	kWh	***cv***
η s_colder	23	%	***cw***
η s_warmer	24	%	***cx***
η s_colder_wh	25	%	***cy***
η s_warmer_wh	26	%	***cz***
LwA_out	27	dB	***da***

Modello scheda prodotto / Product card model

Product fiche: temperature control / Scheda prodotto: dispositivi di controllo della temperatura			
SERIES / Serie			***ca***
Model / Modello	1	-	***cb***
Size / Grandezza	2	-	***cc***
Device class	3	-	***db***
η s	4	%	***dc***

Product fiche: packages of combination heater, temperature control and solar device / Scheda prodotto: insiemi di apparecchi di riscaldamento misti, dispositivi di controllo della temperature e dispositivi solari			
I	1	%	***cm***
II	2	-	***dd***
III	3	-	***de***
IV	4	-	***df***
V	5	-	***dg***
VI	6	-	***dh***
Control class T / Classe controllo T	7	%	***db***
η s_caldaia	8	%	***di***
Collector / Collettore	9	m2	***dj***
V serbatoio	10	m3	***dk***
η collettore	11	%	***dl***
Storage Tank Class / Classe serbatoio	12	-	***dm***
Energy Efficiency / Efficienza energetica	13	%	***dn***
Energy Efficiency C / Efficienza energetica C	14	%	***do***
Energy Efficiency W / Efficienza energetica W	15	%	***dp***
I	16	%	***cn***
II	17	-	***dq***
III	18	-	***dr***
Load Profile / Profilo di carico	19	-	***cf***
η s_wh	20	%	***cn***
η s_wh_colder	21	%	***cy***
η s_wh_warmer	22	%	***cz***

Media temperatura / medium-temperature

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 5.1	SQKN-YEE 1 BH B 34kW MiSAN-YEE 1 S 6.1	SQKN-YEE 1 BH C 34kW MiSAN-YEE 1 S 7.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	NO	NO	NO	NO	NO	NO
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	NO	NO	NO	NO	NO	NO
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	4	6	7	9	12	13
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	130	139	146	146	140	138
aj	**Tj = - 7 °C**	**Pdh**	3,61	4,97	6,09	7,58	10,35	11,12
ak	**Tj = + 2 °C**	**Pdh**	2,16	3,02	3,94	4,44	6,62	6,82
al	**Tj = + 7 °C**	**Pdh**	1,54	2,00	2,52	2,92	4,45	4,73
am	**Tj = + 12 °C**	**Pdh**	1,29	1,30	1,72	1,74	3,04	3,03
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	3,61	4,97	6,09	7,58	10,35	11,12
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	3,91	5,27	4,97	5,46	9,59	9,88
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,9	0,9	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,02	2,12	2,27	2,02	2,05	2,06
au	**Tj = + 2 °C**	**COPd**	3,21	3,41	3,56	3,63	3,51	3,41
av	**Tj = + 7 °C**	**COPd**	4,43	4,82	4,70	4,95	4,77	4,85
aw	**Tj = + 12 °C**	**COPd**	6,20	6,32	9,71	9,87	6,43	6,43
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,02	2,12	2,27	2,02	2,05	2,06
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	1,68	1,64	1,88	1,87	1,85	1,86
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	24	24	24	24	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/55	41/57	41/58	41/60	41/63	41/64
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	2542	3283	3824	4749	6793	7380
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		2750	3000	4750	5000	6000	6250
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		-	-	-	-	-	-
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	-	-	-	-	-	-
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	-	-	-	-	-	-
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	-	-	-	-	-	-
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH D 34kW MiSAN-YEE 1 S 8.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 5.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	NO	NO	NO	NO	NO
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	NO	NO	NO	NO	NO
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	13	4	6	7	9
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	136	130	139	146	146
aj	**Tj = - 7 °C**	**Pdh**	11,79	3,61	4,97	6,09	7,58
ak	**Tj = + 2 °C**	**Pdh**	7,05	2,16	3,02	3,94	4,44
al	**Tj = + 7 °C**	**Pdh**	4,73	1,54	2,00	2,52	2,92
am	**Tj = + 12 °C**	**Pdh**	3,03	1,29	1,30	1,72	1,74
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	11,79	3,61	4,97	6,09	7,58
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	10,67	3,91	5,27	4,97	5,46
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,9	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,04	2,02	2,12	2,27	2,02
au	**Tj = + 2 °C**	**COPd**	3,34	3,21	3,41	3,56	3,63
av	**Tj = + 7 °C**	**COPd**	4,85	4,43	4,82	4,70	4,95
aw	**Tj = + 12 °C**	**COPd**	6,43	6,20	6,32	9,71	9,87
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,04	2,02	2,12	2,27	2,02
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	1,84	1,68	1,64	1,88	1,87
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	34	34	34	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/66	41/55	41/57	41/58	41/60
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	7915	2542	3283	3824	4749
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		6500	2750	3000	4750	5000
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		-	-	-	-	-
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	-	-	-	-	-
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	-	-	-	-	-
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	-	-	-	-	-
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S
cc	**Size / Grandezza**	-	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	°C	55	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	°C	35	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	-	-	-	-	-	-
cg	**Medium-temperature class / Classe a media**	-	A++	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	-	-	-	-	-	-
cj	**Ptn**	kW	4	6	7	9	12	13
ck	**Qhe_ambiente**	kWh	2542	3283	3824	4749	6793	7380
cl	**Qhe_acs**	kWh	-	-	-	-	-	-
cm	**ηs**	%	130	139	146	146	140	138
cn	**ηs_wh**	%	120	120	116	116	-	124
co	**LwA_in**	dB(A)	41	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-	-
cq	**P th_colder**	kW	4	5	7	8	11	12
cr	**P th_warmer**	kW	5	7	9	11	15	16
cs	**Q HE_colder**	kWh	3164	4087	4761	5914	8459	9191
ct	**Q HE_warmer**	kWh	1719	2217	2581	3204	4578	4973
cu	**Q HE_colder_wh**	kWh	-	-	-	-	-	-
cv	**Q HE_warmer_wh**	kWh	-	-	-	-	-	-
cw	**η s_colder**	%	118	126	132	133	127	125
cx	**η s_warmer**	%	163	174	183	184	175	173
cy	**η s_colder_wh**	%	-	-	-	-	-	-
cz	**η s_warmer_wh**	%	-	-	-	-	-	-
da	**LwA_out**	dB(A)	55	57	58	60	63	64
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII	VIII
dc	**η s**	%	5	5	5	5	5	5
dd	**II**	-	0,57	0,47	0,40	0,33	0,34	0,31
de	**III**	-	7	5	4	3	2	2
df	**IV**	-	3	2	2	1	1	1
dg	**V**	-	12,0	13,0	14,0	13,4	12,6	13,0
dh	**VI**	-	33	35	37	38	35	35
di	**η s_caldaia**	%	97	97	97	97	97	97
dj	**Collector / Collettore**	m2	-	-	-	-	-	-
dk	**V serbatoio**	m3	-	-	-	-	-	-
dl	**η collettore**	%	-	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	%	116	124	131	135	131	131
do	**Energy Efficiency C / Efficienza energetica C**	%	114	122	130	134	130	130
dp	**Energy Efficiency W / Efficienza energetica W**	%	128	137	145	149	144	144
dq	**II**	-	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S	SQKN-YEE 1 BH MiSAN-YEE 1 S
cc	**Size / Grandezza**	-	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	°C	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	°C	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	-	-	-	-	-
cg	**Medium-temperature class / Classe a media**	-	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	-	-	-	-	-
cj	**Ptn**	kW	13	4	6	7	9
ck	**Qhe_ambiente**	kWh	7915	2542	3283	3824	4749
cl	**Qhe_acs**	kWh	-	-	-	-	-
cm	**ηs**	%	136	130	139	146	146
cn	**ηs_wh**	%	124	120	120	116	116
co	**LwA_in**	dB(A)	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-
cq	**P th_colder**	kW	13	4	5	7	8
cr	**P th_warmer**	kW	17	5	7	9	11
cs	**Q HE_colder**	kWh	9857	3164	4087	4761	5914
ct	**Q HE_warmer**	kWh	5333	1719	2217	2581	3204
cu	**Q HE_colder_wh**	kWh	-	-	-	-	-
cv	**Q HE_warmer_wh**	kWh	-	-	-	-	-
cw	**η s_colder**	%	124	118	126	132	133
cx	**η s_warmer**	%	171	163	174	183	184
cy	**η s_colder_wh**	%	-	-	-	-	-
cz	**η s_warmer_wh**	%	-	-	-	-	-
da	**LwA_out**	dB(A)	66	55	57	58	60
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII
dc	**η s**	%	5	5	5	5	5
dd	**II**	-	0,30	0,67	0,58	0,52	0,45
de	**III**	-	2	7	5	4	3
df	**IV**	-	1	3	2	2	1
dg	**V**	-	12,4	12,0	13,0	14,0	13,4
dh	**VI**	-	35	33	35	37	38
di	**η s_caldaia**	%	97	97	97	97	97
dj	**Collector / Collettore**	m2	-	-	-	-	-
dk	**V serbatoio**	m3	-	-	-	-	-
dl	**η collettore**	%	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	%	131	113	120	126	129
do	**Energy Efficiency C / Efficienza energetica C**	%	130	110	118	124	128
dp	**Energy Efficiency W / Efficienza energetica W**	%	143	125	133	140	143
dq	**II**	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-

Bassa temperatura / low-temperature

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 24kW MiSAN-YEE 1 S 5.1	SQKN-YEE 1 BH B 34kW MiSAN-YEE 1 S 6.1	SQKN-YEE 1 BH C 34kW MiSAN-YEE 1 S 7.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	YES	YES	YES	YES	YES	YES
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	5	6	8	10	12	14
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	202	203	210	208	197	193
aj	**Tj = - 7 °C**	**Pdh**	4,74	5,51	7,15	8,45	10,69	12,33
ak	**Tj = + 2 °C**	**Pdh**	135,00	3,30	4,65	5,23	6,57	7,97
al	**Tj = + 7 °C**	**Pdh**	1,99	2,24	2,91	3,47	4,48	5,21
am	**Tj = + 12 °C**	**Pdh**	1,45	1,45	1,85	1,96	3,67	3,67
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	4,74	5,51	7,15	8,45	10,69	12,33
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	5,21	5,80	6,42	7,38	10,95	11,90
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,90	0,90	0,90	0,90	0,90	0,90
at	**Tj = - 7 °C**	**COPd**	3,15	3,13	3,30	3,18	3,07	2,87
au	**Tj = + 2 °C**	**COPd**	4,96	4,91	5,17	5,03	4,68	4,62
av	**Tj = + 7 °C**	**COPd**	6,81	7,11	7,08	7,33	6,90	7,07
aw	**Tj = + 12 °C**	**COPd**	8,94	8,94	9,46	9,94	9,96	9,95
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	3,15	3,13	3,30	3,18	3,07	2,87
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	2,86	2,70	3,06	2,97	2,79	2,69
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0,000	0,000	0,000	0,000	0,000	0,000
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	24	24	24	24	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/55	41/57	41/58	41/60	41/63	41/64
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	2161	2502	3141	3747	4994	5868
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		2750	3000	4750	5000	6000	6250
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		-	-	-	-	-	-
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	-	-	-	-	-	-
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	-	-	-	-	-	-
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	-	-	-	-	-	-
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH D 34kW MiSAN-YEE 1 S 8.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 34kW MiSAN-YEE 1 S 5.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	YES	YES	YES	YES	YES
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	16	5	6	8	10
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	193	202	203	210	208
aj	**Tj = - 7 °C**	**Pdh**	13,82	4,74	5,51	7,15	8,45
ak	**Tj = + 2 °C**	**Pdh**	8,55	147	3,30	4,65	5,23
al	**Tj = + 7 °C**	**Pdh**	5,88	1,99	2,24	2,91	3,47
am	**Tj = + 12 °C**	**Pdh**	3,67	1,45	1,45	1,85	1,96
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	13,82	4,74	5,51	7,15	8,45
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	12,64	5,21	5,80	6,42	7,38
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,90	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,86	3,15	3,13	3,30	3,18
au	**Tj = + 2 °C**	**COPd**	4,59	4,96	4,91	5,17	5,03
av	**Tj = + 7 °C**	**COPd**	7,13	6,81	7,11	7,08	7,33
aw	**Tj = + 12 °C**	**COPd**	9,95	8,94	8,94	9,46	9,94
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,86	3,15	3,13	3,30	3,18
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	2,59	2,86	2,70	3,06	2,97
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0,000	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	34	34	34	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/66	41/55	41/57	41/58	41/60
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	6602	2161	2502	3141	3747
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		6500	2750	3000	4750	5000
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		-	-	-	-	-
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	-	-	-	-	-
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	-	-	-	-	-
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	-	-	-	-	-
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH 24kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH 24kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH 24kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH 24kW MiSAN-YEE 1 S 5.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 6.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 7.1
cc	**Size / Grandezza**	-	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	°C	55	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	°C	35	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	-	-	-	-	-	-
cg	**Medium-temperature class / Classe a media temperatura**	-	A++	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	-	-	-	-	-	-
cj	**Ptn**	kW	4	6	7	9	12	13
ck	**Qhe_ambiente**	kWh	2161	2502	3141	3747	4994	5868
cl	**Qhe_acs**	kWh	-	-	-	-	-	-
cm	**ηs**	%	130	139	146	146	140	138
cn	**ηs_wh**	%	-	-	-	-	-	-
co	**LwA_in**	dB(A)	41	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-	-
cq	**P th_colder**	kW	5	6	8	10	13	14
cr	**P th_warmer**	kW	7	8	10	12	15	16
cs	**Q HE_colder**	kWh	3245	3830	4808	5737	7648	8987
ct	**Q HE_warmer**	kWh	1513	1750	2194	2615	3483	3670
cu	**Q HE_colder_wh**	kWh	-	-	-	-	-	-
cv	**Q HE_warmer_wh**	kWh	-	-	-	-	-	-
cw	**η s_colder**	%	163	164	169	168	159	156
cx	**η s_warmer**	%	241	242	250	248	235	231
cy	**η s_colder_wh**	%	-	-	-	-	-	-
cz	**η s_warmer_wh**	%	-	-	-	-	-	-
da	**LwA_out**	dB(A)	55	57	58	60	63	64
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII	VIII
dc	**η s**	%	5	5	5	5	5	5
dd	**II**	-	0,57	0,47	0,40	0,33	0,34	0,31
de	**III**	-	7	5	4	3	2	2
df	**IV**	-	3	2	2	1	1	1
dg	**V**	-	12,0	13,0	14,0	13,4	12,6	13,0
dh	**VI**	-	33	35	37	38	35	35
di	**η s_caldaia**	%	97	97	97	97	97	97
dj	**Collector / Collettore**	m2	-	-	-	-	-	-
dk	**V serbatoio**	m3	-	-	-	-	-	-
dl	**η collettore**	%	-	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	%	147	158	170	177	168	168
do	**Energy Efficiency C / Efficienza energetica C**	%	144	156	168	176	167	167
dp	**Energy Efficiency W / Efficienza energetica W**	%	159	171	184	190	181	181
dq	**II**	-	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 8.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH 34kW MiSAN-YEE 1 S 5.1
cc	**Size / Grandezza**	-	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	°C	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	°C	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	-	-	-	-	-
cg	**Medium-temperature class / Classe a media temperatura**	-	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	-	-	-	-	-
cj	**Ptn**	kW	13	4	6	7	9
ck	**Qhe_ambiente**	kWh	6602	2161	2502	3141	3747
cl	**Qhe_acs**	kWh	-	-	-	-	-
cm	**ηs**	%	136	130	139	146	146
cn	**ηs_wh**	%	-	-	-	-	-
co	**LwA_in**	dB(A)	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-
cq	**P th_colder**	kW	16	5	6	8	10
cr	**P th_warmer**	kW	17	7	8	10	12
cs	**Q HE_colder**	kWh	10111	3245	3830	4808	5737
ct	**Q HE_warmer**	kWh	3914	1513	1750	2194	2615
cu	**Q HE_colder_wh**	kWh	-	-	-	-	-
cv	**Q HE_warmer_wh**	kWh	-	-	-	-	-
cw	**η s_colder**	%	155	163	164	169	168
cx	**η s_warmer**	%	230	241	242	250	248
cy	**η s_colder_wh**	%	-	-	-	-	-
cz	**η s_warmer_wh**	%	-	-	-	-	-
da	**LwA_out**	dB(A)	66	55	57	58	60
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII
dc	**η s**	%	5	5	5	5	5
dd	**II**	-	0,30	0,67	0,58	0,52	0,45
de	**III**	-	2	7	5	4	3
df	**IV**	-	1	3	2	2	1
dg	**V**	-	12,4	12,0	13,0	14,0	13,4
dh	**VI**	-	35	33	35	37	38
di	**η s_caldaia**	%	97	97	97	97	97
dj	**Collector / Collettore**	m2	-	-	-	-	-
dk	**V serbatoio**	m3	-	-	-	-	-
dl	**η collettore**	%	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	%	170	136	146	156	164
do	**Energy Efficiency C / Efficienza energetica C**	%	169	134	145	155	162
dp	**Energy Efficiency W / Efficienza energetica W**	%	182	148	159	170	177
dq	**II**	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-

Media temperatura (Tower) / medium-temperature (Tower)

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 5.1	SQKN-YEE 1 BH B 34kW 150L MiSAN-YEE 1 S 6.1	SQKN-YEE 1 BH C 34kW 150L MiSAN-YEE 1 S 7.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	NO	NO	NO	NO	NO	NO
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	4,1	5,6	6,9	8,6	11,7	12,6
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	130	139	146	146	140	138
aj	**Tj = - 7 °C**	**Pdh**	3,61	4,97	6,09	7,58	10,35	11,12
ak	**Tj = + 2 °C**	**Pdh**	2,16	3,02	3,94	4,44	6,62	6,82
al	**Tj = + 7 °C**	**Pdh**	1,54	2,00	2,52	2,92	4,45	4,73
am	**Tj = + 12 °C**	**Pdh**	1,29	1,30	1,72	1,74	3,04	3,03
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	3,61	4,97	6,09	7,58	10,35	11,12
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	3,91	5,27	4,97	5,46	9,59	9,88
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,9	0,9	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,02	2,12	2,27	2,02	2,05	2,06
au	**Tj = + 2 °C**	**COPd**	3,21	3,41	3,56	3,63	3,51	3,41
av	**Tj = + 7 °C**	**COPd**	4,43	4,82	4,70	4,95	4,77	4,85
aw	**Tj = + 12 °C**	**COPd**	6,20	6,32	9,71	9,87	6,43	6,43
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,02	2,12	2,27	2,02	2,05	2,06
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	1,68	1,64	1,88	1,87	1,85	1,86
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	24	24	24	24	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/55	41/57	41/58	41/60	41/63	41/64
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	2542	3283	3824	4749	6793	7380
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		2750	3000	4750	5000	6000	6250
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		L	L	L	L	L	L
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	4,128	4,128	4,272	4,272		
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	115	115	115	115	91	91
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	852	852	880	880	1128	1128
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH D 34kW 150L MiSAN-YEE 1 S 8.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 5.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	NO	NO	NO	NO	NO
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	13,3	4,1	5,6	6,9	8,6
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	136	130	139	146	146
aj	**Tj = - 7 °C**	**Pdh**	11,79	3,61	4,97	6,09	7,58
ak	**Tj = + 2 °C**	**Pdh**	7,05	2,16	3,02	3,94	4,44
al	**Tj = + 7 °C**	**Pdh**	4,73	1,54	2,00	2,52	2,92
am	**Tj = + 12 °C**	**Pdh**	3,03	1,29	1,30	1,72	1,74
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	11,79	3,61	4,97	6,09	7,58
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	10,67	3,91	5,27	4,97	5,46
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,9	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,04	2,02	2,12	2,27	2,02
au	**Tj = + 2 °C**	**COPd**	3,34	3,21	3,41	3,56	3,63
av	**Tj = + 7 °C**	**COPd**	4,85	4,43	4,82	4,70	4,95
aw	**Tj = + 12 °C**	**COPd**	6,43	6,20	6,32	9,71	9,87
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,04	2,02	2,12	2,27	2,02
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	1,84	1,68	1,64	1,88	1,87
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	34	34	34	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale	Natura gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/66	41/55	41/57	41/58	41/60
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	7915	2542	3283	3824	4749
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		6500	2750	3000	4750	5000
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		L	L	L	L	L
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**		4,128	4,128	4,272	4,272
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	91	115	115	115	115
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	1128	852	852	880	880
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S
cc	**Size / Grandezza**	-	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	°C	55	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	°C	35	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	L	L	L	L	L	L
cg	**Medium-temperature class / Classe a media temperatura**	-	A++	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	A+	A+	A+	A+	A	A
cj	**Ptn**	kW	4	6	7	9	12	13
ck	**Qhe_ambiente**	kWh	2542	3283	3824	4749	6793	7380
cl	**Qhe_acs**	kWh	852	852	880	880	1128	1128
cm	**ηs**	%	130	139	146	146	140	138
cn	**ηs_wh**	%	115	115	115	115	91	91
co	**LwA_in**	dB(A)	41	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-	-
cq	**P th_colder**	kW	4	5	7	8	11	12
cr	**P th_warmer**	kW	5	7	9	11	15	16
cs	**Q HE_colder**	kWh	3164	4087	4761	5914	8459	9191
ct	**Q HE_warmer**	kWh	1719	2217	2581	3204	4578	4973
cu	**Q HE_colder_wh**	kWh	985	985	1205	1205	1545	1545
cv	**Q HE_warmer_wh**	kWh	826	826	759	759	973	973
cw	**η s_colder**	%	118	126	132	133	127	125
cx	**η s_warmer**	%	163	174	183	184	175	173
cy	**η s_colder_wh**	%	104	104	85	85	76	76
cz	**η s_warmer_wh**	%	124	124	135	135	106	106
da	**LwA_out**	dB(A)	55	57	58	60	63	64
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII	VIII
dc	**η s**	%	5	5	5	5	5	5
dd	**II**	-	0,57	0,47	0,40	0,33	0,34	0,31
de	**III**	-	7	5	4	3	2	2
df	**IV**	-	3	2	2	1	1	1
dg	**V**	-	12,0	13,0	14,0	13,4	12,6	13,0
dh	**VI**	-	33	35	37	38	35	35
di	**η s_caldaia**	%	97	97	97	97	97	97
dj	**Collector / Collettore**	m2	-	-	-	-	-	-
dk	**V serbatoio**	m3	-	-	-	-	-	-
dl	**η collettore**	%	-	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	%	116	124	131	135	131	131
do	**Energy Efficiency C / Efficienza energetica C**	%	114	122	130	134	130	130
dp	**Energy Efficiency W / Efficienza energetica W**	%	128	137	145	149	144	144
dq	**II**	-	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
ca	SERIES / Serie	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	Model / Modello	-	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S
cc	Size / Grandezza	-	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
cd	Medium-temperature application / Applicazione a media temperatura	°C	55	55	55	55	55
ce	Low-temperature application / Applicazione a bassa temperatura	°C	35	35	35	35	35
cf	DHW profile / Profilo ACS	-	L	L	L	L	L
cg	Medium-temperature class / Classe a media temperatura	-	A++	A++	A++	A++	A++
ch	Low-temperature class / Classe a bassa temperatura	-	A+++	A+++	A+++	A+++	A+++
ci	DHW class / Classe ACS	-	A	A+	A+	A+	A+
cj	Ptn	kW	13	4	6	7	9
ck	Qhe_ambiente	kWh	7915	2542	3283	3824	4749
cl	Qhe_acs	kWh	1128	852	852	880	880
cm	ηs	%	136	130	139	146	146
cn	ηs_wh	%	91	115	115	115	115
co	LwA_in	dB(A)	41	41	41	41	41
cp	FOM	-	-	-	-	-	-
cq	P th_colder	kW	13	4	5	7	8
cr	P th_warmer	kW	17	5	7	9	11
cs	Q HE_colder	kWh	9857	3164	4087	4761	5914
ct	Q HE_warmer	kWh	5333	1719	2217	2581	3204
cu	Q HE_colder_wh	kWh	1545	985	985	1205	1205
cv	Q HE_warmer_wh	kWh	973	826	826	759	759
cw	η s_colder	%	124	118	126	132	133
cx	η s_warmer	%	171	163	174	183	184
cy	η s_colder_wh	%	76	104	104	85	85
cz	η s_warmer_wh	%	106	124	124	135	135
da	LwA_out	dB(A)	66	55	57	58	60
db	Device class	-	VIII	VIII	VIII	VIII	VIII
dc	η s	%	5	5	5	5	5
dd	II	-	0,30	0,67	0,58	0,52	0,45
de	III	-	2	7	5	4	3
df	IV	-	1	3	2	2	1
dg	V	-	12,4	12,0	13,0	14,0	13,4
dh	VI	-	35	33	35	37	38
di	η s_caldaia	%	97	97	97	97	97
dj	Collector / Collettore	m2	-	-	-	-	-
dk	V serbatoio	m3	-	-	-	-	-
dl	η collettore	%	-	-	-	-	-
dm	Storage Tank Class / Classe serbatoio	-	-	-	-	-	-
dn	Energy Efficiency / Efficienza energetica	%	131	113	120	126	129
do	Energy Efficiency C / Efficienza energetica C	%	130	110	118	124	128
dp	Energy Efficiency W / Efficienza energetica W	%	143	125	133	140	143
dq	II	-	-	-	-	-	-
dr	III	-	-	-	-	-	-

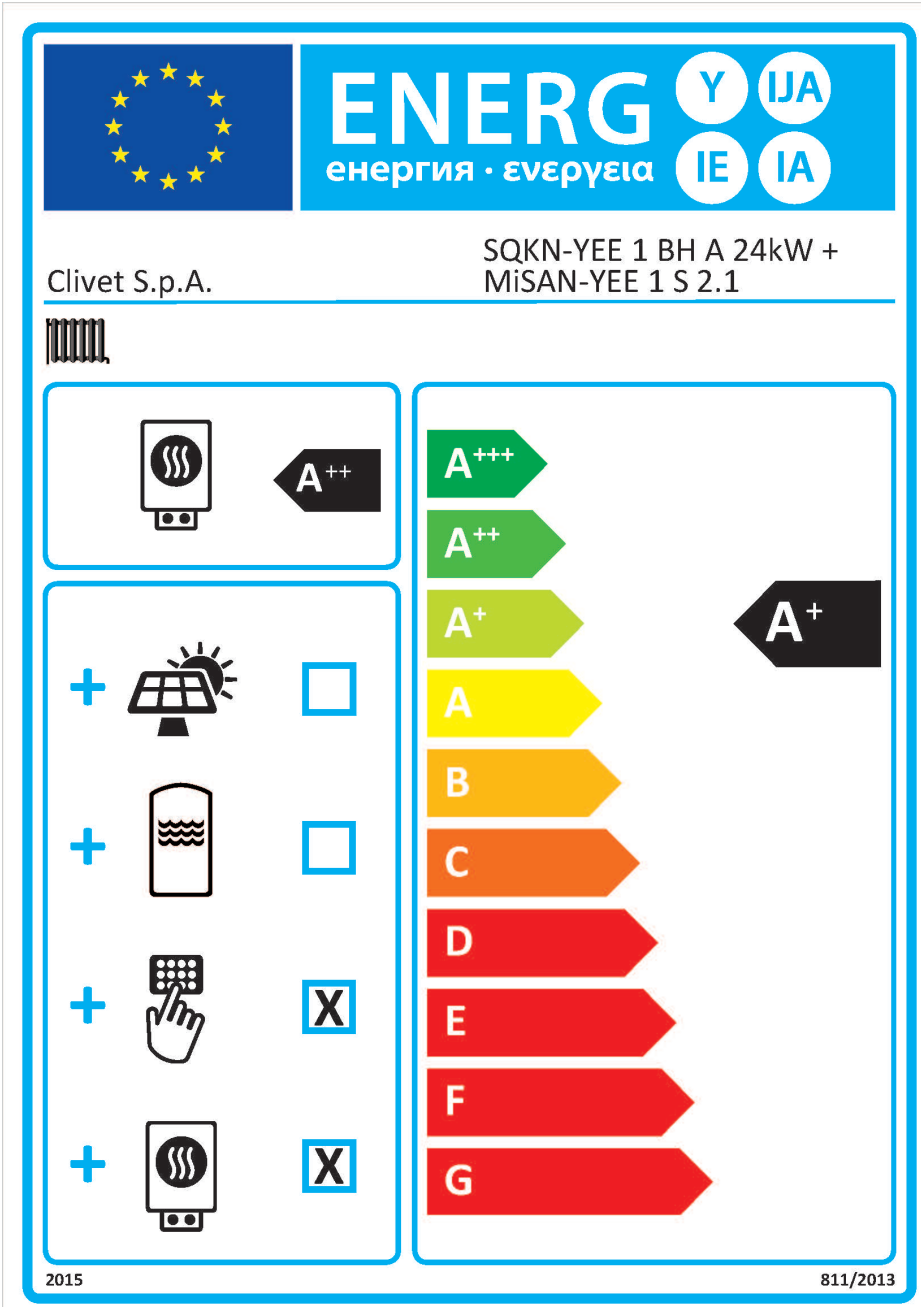
Bassa temperatura (Tower) / low-temperature (Tower)

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 24kW 150L MiSAN-YEE 1 S 5.1	SQKN-YEE 1 BH B 34kW 150L MiSAN-YEE 1 S 6.1	SQKN-YEE 1 BH C 34kW 150L MiSAN-YEE 1 S 7.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	YES	YES	YES	YES	YES	YES
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	5,4	6,2	8,1	9,6	12,1	13,9
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	202	203	210	208	197	193
aj	**Tj = - 7 °C**	**Pdh**	4,74	5,51	7,15	8,45	10,69	12,33
ak	**Tj = + 2 °C**	**Pdh**	135,00	3,30	4,65	5,23	6,57	7,97
al	**Tj = + 7 °C**	**Pdh**	1,99	2,24	2,91	3,47	4,48	5,21
am	**Tj = + 12 °C**	**Pdh**	1,45	1,45	1,85	1,96	3,67	3,67
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	4,74	5,51	7,15	8,45	10,69	12,33
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	5,21	5,80	6,42	7,38	10,95	11,90
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,90	0,90	0,90	0,90	0,90	0,90
at	**Tj = - 7 °C**	**COPd**	3,15	3,13	3,30	3,18	3,07	2,87
au	**Tj = + 2 °C**	**COPd**	4,96	4,91	5,17	5,03	4,68	4,62
av	**Tj = + 7 °C**	**COPd**	6,81	7,11	7,08	7,33	6,90	7,07
aw	**Tj = + 12 °C**	**COPd**	8,94	8,94	9,46	9,94	9,96	9,95
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	3,15	3,13	3,30	3,18	3,07	2,87
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	2,86	2,70	3,06	2,97	2,79	2,69
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	24	24	24	24	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/55	41/57	41/58	41/60	41/63	41/64
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	2161	2502	3141	3747	4994	5868
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		2750	3000	4750	5000	6000	6250
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		L	L	L	L	L	L
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**	4,128	4,128	4,272	4,272		
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	115	115	115	115	91	91
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	852	852	880	880	1128	1128
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
aa	**Model(s): / Modelli:**	-	SQKN-YEE 1 BH D 34kW 150L MiSAN-YEE 1 S 8.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 2.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 3.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 4.1	SQKN-YEE 1 BH A 34kW 150L MiSAN-YEE 1 S 5.1
ab	**Air-to-water heat pump: / Pompa di calore aria/acqua:**	-	YES	YES	YES	YES	YES
ac	**Water-to-water heat pump: / Pompa di calore acqua/acqua:**	-	NO	NO	NO	NO	NO
ad	**Brine-to-water heat pump: / Pompa di calore salamoia/acqua:**	-	NO	NO	NO	NO	NO
ae	**Low-temperature heat pump: / Pompa di calore a bassa temperatura:**	-	YES	YES	YES	YES	YES
af	**Equipped with a supplementary heater: / Con riscaldatore supplementare:**	-	YES	YES	YES	YES	YES
ag	**Heat pump combination heater: / Apparecchio misto a pompa di calore:**	-	YES	YES	YES	YES	YES
ah	**Rated heat output (*) / Potenza termica nominale (*)**	**Prated**	15,6	5,4	6,2	8,1	9,6
ai	**Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente**	**ηs**	193	202	203	210	208
aj	**Tj = - 7 °C**	**Pdh**	13,82	4,74	5,51	7,15	8,45
ak	**Tj = + 2 °C**	**Pdh**	8,55	147	3,30	4,65	5,23
al	**Tj = + 7 °C**	**Pdh**	5,88	1,99	2,24	2,91	3,47
am	**Tj = + 12 °C**	**Pdh**	3,67	1,45	1,45	1,85	1,96
an	**Tj = bivalent temperature / Temperatura bivalente**	**Pdh**	13,82	4,74	5,51	7,15	8,45
ao	**Tj = operation limit temperature / Temperatura limite di esercizio**	**Pdh**	12,64	5,21	5,80	6,42	7,38
ap	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**Pdh**	-	-	-	-	-
aq	**Bivalent temperature / Temperatura bivalente**	**Tbiv**	-7	-7	-7	-7	-7
ar	**Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento**	**Pcych**	-	-	-	-	-
as	**Degradation co-efficient (**) / Coefficiente di degradazione (**)**	**Cdh**	0,90	0,9	0,9	0,9	0,9
at	**Tj = - 7 °C**	**COPd**	2,86	3,15	3,13	3,30	3,18
au	**Tj = + 2 °C**	**COPd**	4,59	4,96	4,91	5,17	5,03
av	**Tj = + 7 °C**	**COPd**	7,13	6,81	7,11	7,08	7,33
aw	**Tj = + 12 °C**	**COPd**	9,95	8,94	8,94	9,46	9,94
ax	**Tj = bivalent temperature / Temperatura bivalente**	**COPd**	2,86	3,15	3,13	3,30	3,18
ay	**Tj = operation limit temperature / Temperatura limite di esercizio**	**COPd**	2,59	2,86	2,70	3,06	2,97
az	**For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C) / Per le pompa di calore aria/ acqua: T j = – 15 °C (se TOL < – 20 °C)**	**COPd**	-	-	-	-	-
ba	**For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio**	**TOL**	-10	-10	-10	-10	-10
bb	**Cycling interval efficiency / Efficienza della ciclicità degli intervalli**	**COPcych**	-	-	-	-	-
bc	**Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua**	**WTOL**	65	65	65	65	65
bd	**Off mode / Modo spento**	**POFF**	0,015	0,015	0,015	0,015	0,015
be	**Thermostat-off mode / Modo termostato spento**	**PTO**	0,015	0,015	0,015	0,015	0,015
bf	**Standby mode / Modo stand-by**	**PSB**	0,015	0,015	0,015	0,015	0,015
bg	**Crankcase heater mode / Modo riscaldamento del carter**	**PCK**	0	0	0	0	0
bh	**Rated heat output (*) / Potenza termica nominale (*)**	**Psup**	34	34	34	34	34
bi	**Type of energy input / Tipo di alimentazione energetica**		Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale	Natural gas / Gas naturale
bj	**Capacity control / Controllo della capacità**		Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile	Variable / Variabile
bl	**Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno**	**LWA**	41/66	41/55	41/57	41/58	41/60
bl	**Annual energy consumption / Consumo energetico annuale**	**kWh**	6602	2161	2502	3141	3747
bm	**For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno**		6500	2750	3000	4750	5000
bn	**For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno**		-	-	-	-	-
bo	**Declared load profile / Profilo di carico dichiarato**		L	L	L	L	L
bp	**Daily electricity consumption / Consumo quotidiano di energia elettrica**	**Qelec**		4,128	4,128	4,272	4,272
bq	**Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua**	**ηwh**	91	115	115	115	115
br	**Daily fuel consumption / Consumo quotidiano di combustibile**	**Qfuel**	-	-	-	-	-
bs	**Annual electricity consumption / Consumo annuo di energia elettrica**	**AEC**	1128	852	852	880	880
bt	**Annual fuel consumption / Consumo annuo di combustibile**	**AEF**	-	-	-	-	-

ID	Description	Symbol	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
ca	**SERIES / Serie**	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	**Model / Modello**	-	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S
cc	**Size / Grandezza**	-	A - 2.1 - 24kW	A - 3.1 - 24kW	A - 4.1 - 24kW	A - 5.1 - 24kW	B - 6.1 - 34kW	C - 7.1 - 34kW
cd	**Medium-temperature application / Applicazione a media temperatura**	**°C**	55	55	55	55	55	55
ce	**Low-temperature application / Applicazione a bassa temperatura**	**°C**	35	35	35	35	35	35
cf	**DHW profile / Profilo ACS**	-	L	L	L	L	L	L
cg	**Medium-temperature class / Classe a media temperatura**	-	A++	A++	A++	A++	A++	A++
ch	**Low-temperature class / Classe a bassa temperatura**	-	A+++	A+++	A+++	A+++	A+++	A+++
ci	**DHW class / Classe ACS**	-	A+	A+	A+	A+	A	A
cj	**Ptn**	**kW**	4	6	7	9	12	13
ck	**Qhe_ambiente**	**kWh**	2161	2502	3141	3747	4994	5868
cl	**Qhe_acs**	**kWh**	852	852	880	880	1128	1128
cm	**ηs**	**%**	130	139	146	146	140	138
cn	**ηs_wh**	**%**	115	115	115	115	91	91
co	**LwA_in**	**dB(A)**	41	41	41	41	41	41
cp	**FOM**	-	-	-	-	-	-	-
cq	**P th_colder**	**kW**	5	6	8	10	13	14
cr	**P th_warmer**	**kW**	7	8	10	12	15	16
cs	**Q HE_colder**	**kWh**	3245	3830	4808	5737	7648	8987
ct	**Q HE_warmer**	**kWh**	1513	1750	2194	2615	3483	3670
cu	**Q HE_colder_wh**	**kWh**	985	985	1205	1205	1545	1545
cv	**Q HE_warmer_wh**	**kWh**	826	826	759	759	973	973
cw	**η s_colder**	**%**	163	164	169	168	159	156
cx	**η s_warmer**	**%**	241	242	250	248	235	231
cy	**η s_colder_wh**	**%**	104	104	85	85	76	76
cz	**η s_warmer_wh**	**%**	124	124	135	135	106	106
da	**LwA_out**	**dB(A)**	55	57	58	60	63	64
db	**Device class**	-	VIII	VIII	VIII	VIII	VIII	VIII
dc	**η s**	**%**	5	5	5	5	5	5
dd	**II**	-	0,57	0,47	0,40	0,33	0,34	0,31
de	**III**	-	7	5	4	3	2	2
df	**IV**	-	3	2	2	1	1	1
dg	**V**	-	12,0	13,0	14,0	13,4	12,6	13,0
dh	**VI**	-	33	35	37	38	35	35
di	**η s_caldaia**	**%**	97	97	97	97	97	97
dj	**Collector / Collettore**	**m2**	-	-	-	-	-	-
dk	**V serbatoio**	**m3**	-	-	-	-	-	-
dl	**η collettore**	**%**	-	-	-	-	-	-
dm	**Storage Tank Class / Classe serbatoio**	-	-	-	-	-	-	-
dn	**Energy Efficiency / Efficienza energetica**	**%**	147	158	170	177	168	168
do	**Energy Efficiency C / Efficienza energetica C**	**%**	144	156	168	176	167	167
dp	**Energy Efficiency W / Efficienza energetica W**	**%**	159	171	184	190	181	181
dq	**II**	-	-	-	-	-	-	-
dr	**III**	-	-	-	-	-	-	-

ID	Description	Symbol	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
ca	SERIES / Serie	-	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid	SPHERA EVO 2.0 EASYHybrid
cb	Model / Modello	-	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S	SQKN-YEE 1 BH 150L MiSAN-YEE 1 S
cc	Size / Grandezza	-	C - 8.1 - 34kW	A - 2.1 - 34kW	A - 3.1 - 34kW	A - 4.1 - 34kW	A - 5.1 - 34kW
cd	Medium-temperature application / Applicazione a media temperatura	°C	55	55	55	55	55
ce	Low-temperature application / Applicazione a bassa temperatura	°C	35	35	35	35	35
cf	DHW profile / Profilo ACS	-	L	L	L	L	L
cg	Medium-temperature class / Classe a media temperatura	-	A++	A++	A++	A++	A++
ch	Low-temperature class / Classe a bassa temperatura	-	A+++	A+++	A+++	A+++	A+++
ci	DHW class / Classe ACS	-	A	A+	A+	A+	A+
cj	Ptn	kW	13	4	6	7	9
ck	Qhe_ambiente	kWh	6602	2161	2502	3141	3747
cl	Qhe_acs	kWh	1128	852	852	880	880
cm	ηs	%	136	130	139	146	146
cn	ηs_wh	%	91	115	115	115	115
co	LwA_in	dB(A)	41	41	41	41	41
cp	FOM	-	-	-	-	-	-
cq	P th_colder	kW	16	5	6	8	10
cr	P th_warmer	kW	17	7	8	10	12
cs	Q HE_colder	kWh	10111	3245	3830	4808	5737
ct	Q HE_warmer	kWh	3914	1513	1750	2194	2615
cu	Q HE_colder_wh	kWh	1545	985	985	1205	1205
cv	Q HE_warmer_wh	kWh	973	826	826	759	759
cw	η s_colder	%	155	163	164	169	168
cx	η s_warmer	%	230	241	242	250	248
cy	η s_colder_wh	%	76	104	104	85	85
cz	η s_warmer_wh	%	106	124	124	135	135
da	LwA_out	dB(A)	66	55	57	58	60
db	Device class	-	VIII	VIII	VIII	VIII	VIII
dc	η s	%	5	5	5	5	5
dd	II	-	0,30	0,67	0,58	0,52	0,45
de	III	-	2	7	5	4	3
df	IV	-	1	3	2	2	1
dg	V	-	12,4	12,0	13,0	14,0	13,4
dh	VI	-	35	33	35	37	38
di	η s_caldaia	%	97	97	97	97	97
dj	Collector / Collettore	m2	-	-	-	-	-
dk	V serbatoio	m3	-	-	-	-	-
dl	η collettore	%	-	-	-	-	-
dm	Storage Tank Class / Classe serbatoio	-	-	-	-	-	-
dn	Energy Efficiency / Efficienza energetica	%	170	136	146	156	164
do	Energy Efficiency C / Efficienza energetica C	%	169	134	145	155	162
dp	Energy Efficiency W / Efficienza energetica W	%	182	148	159	170	177
dq	II	-	-	-	-	-	-
dr	III	-	-	-	-	-	-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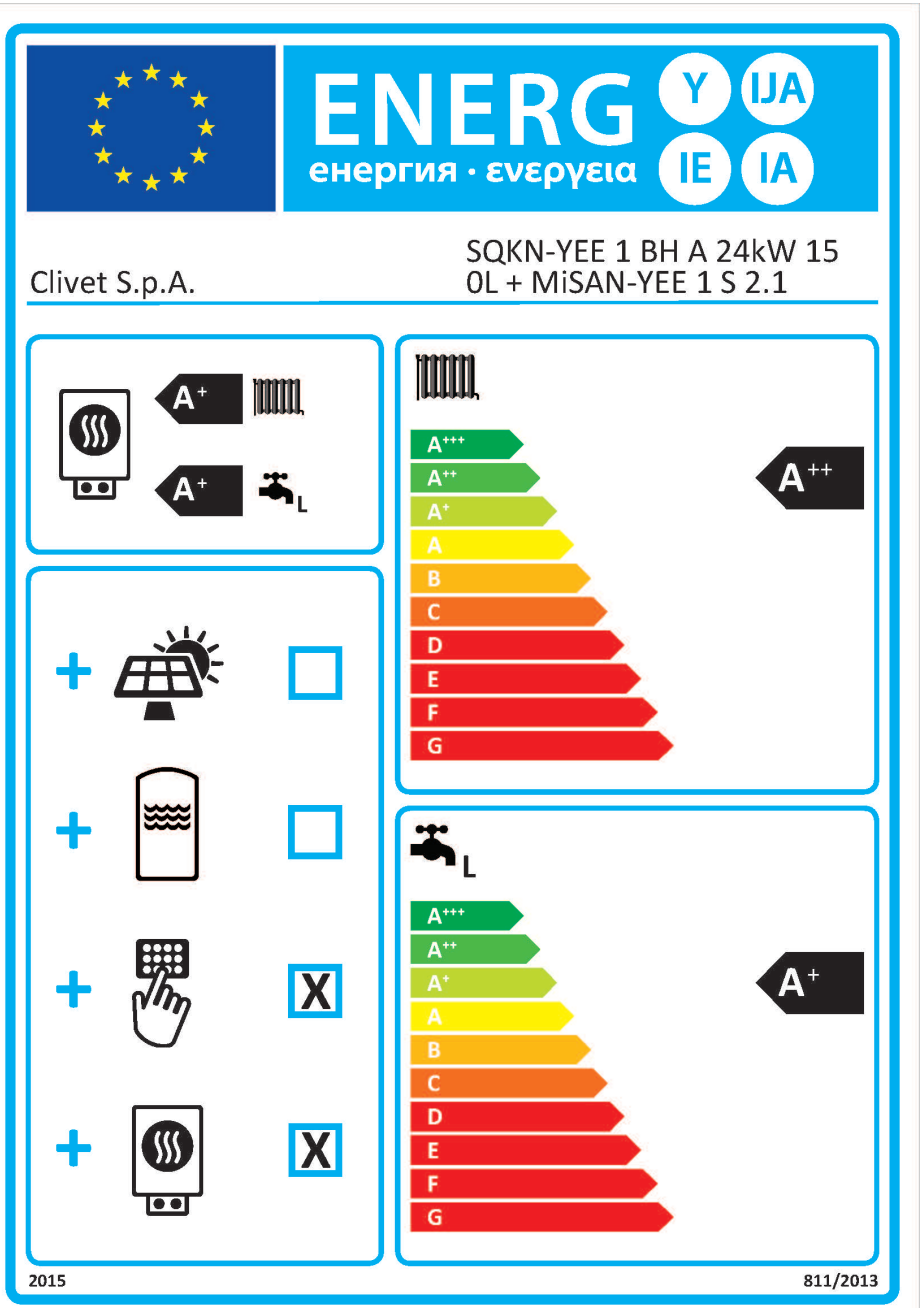
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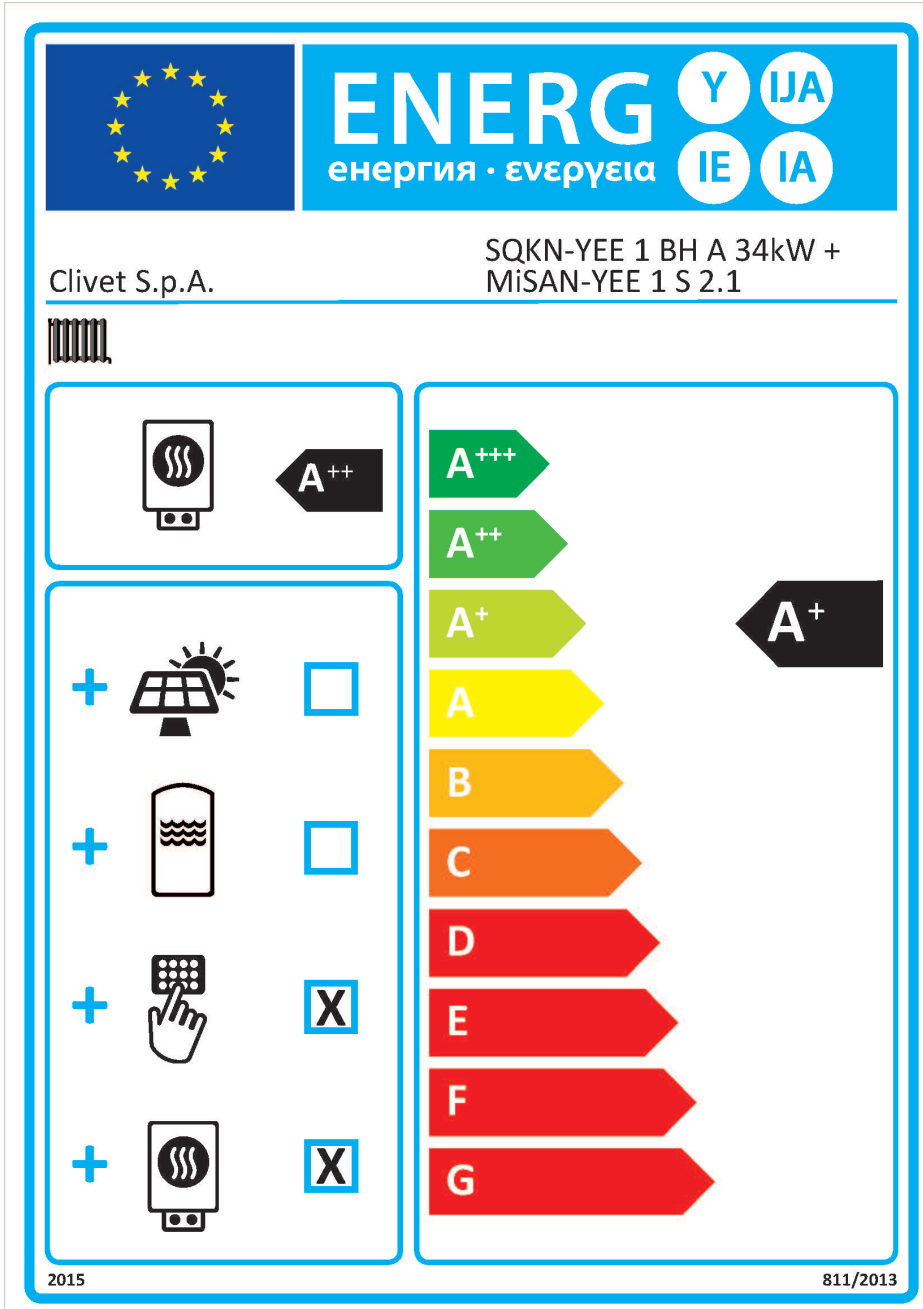
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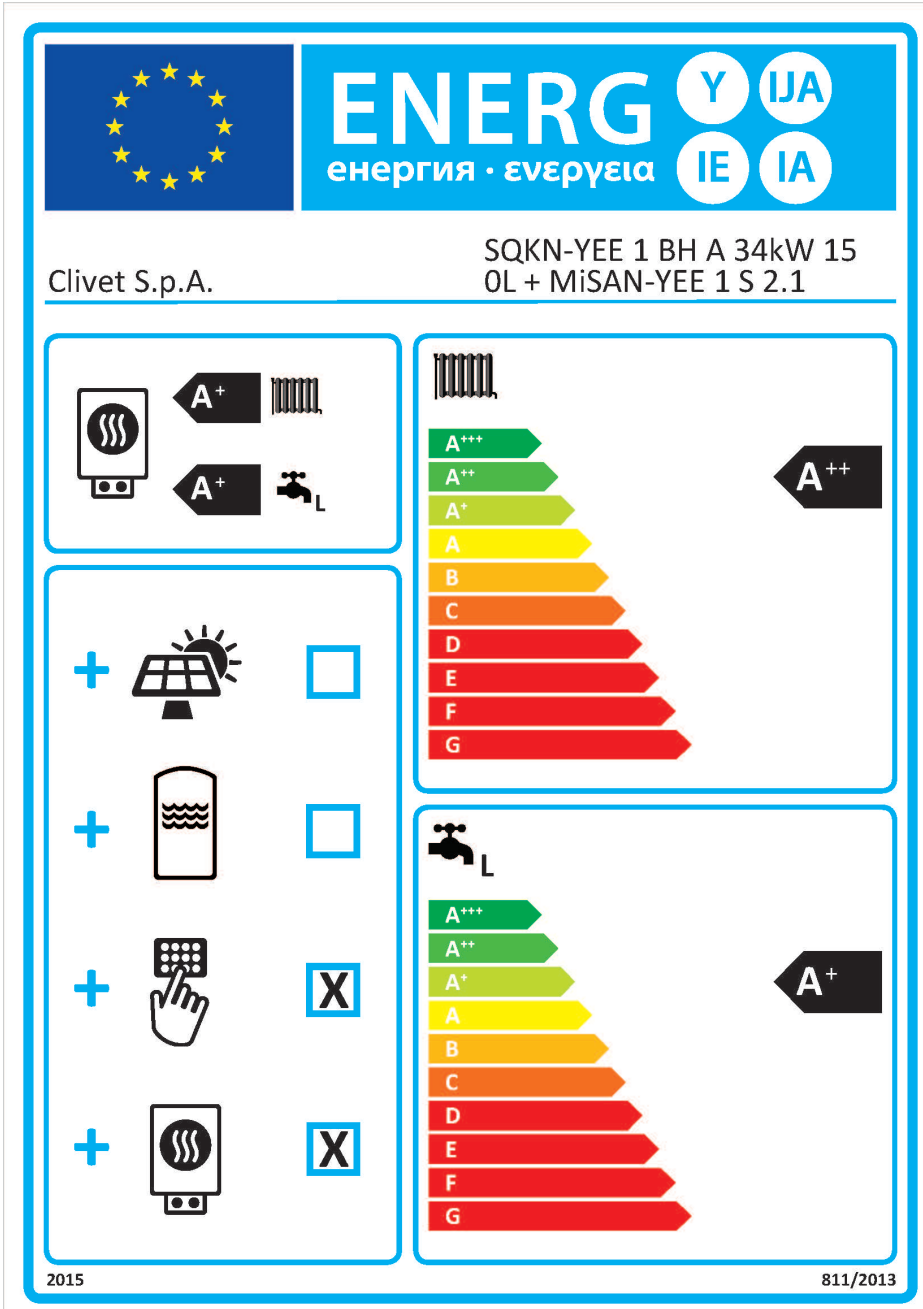
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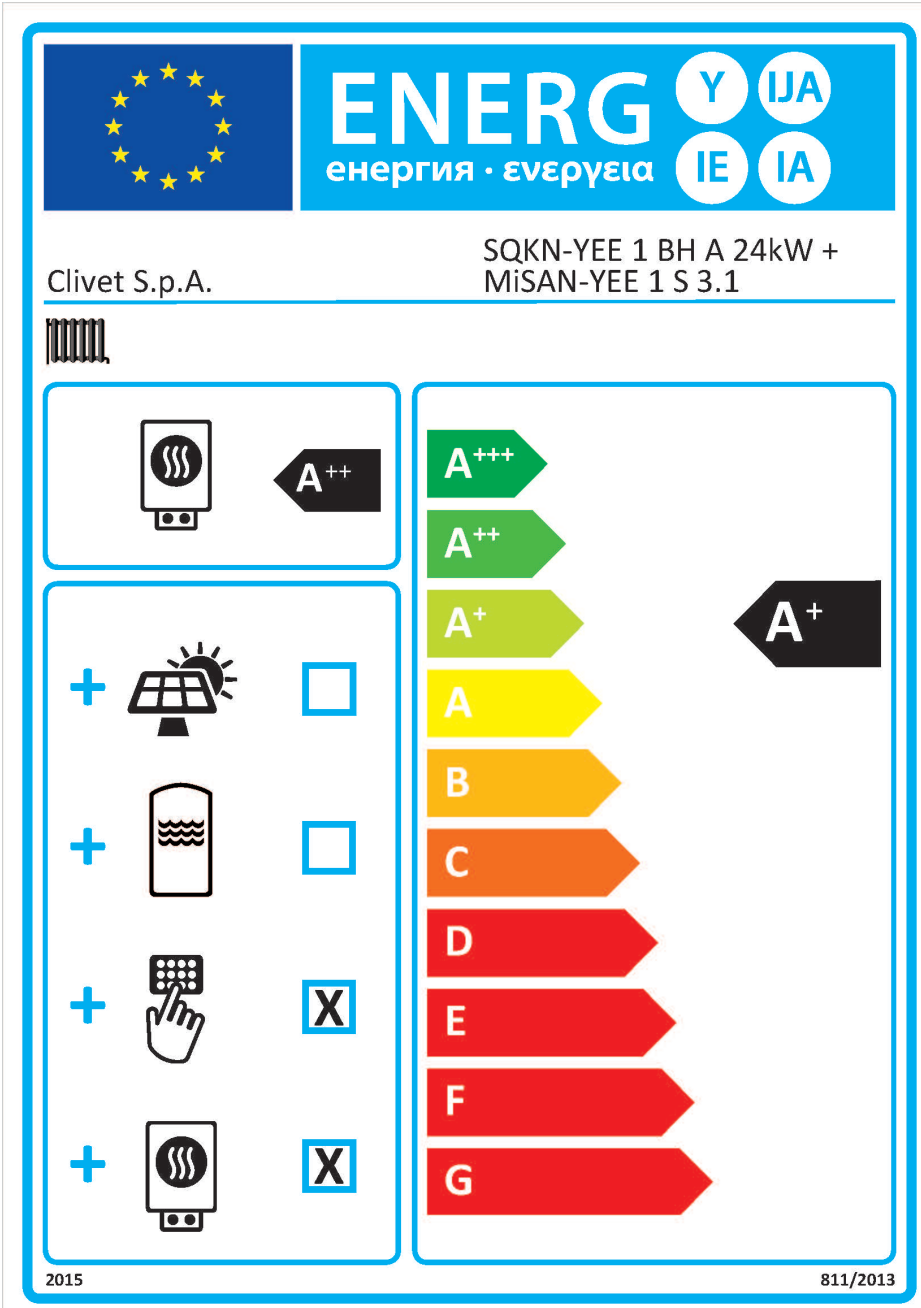
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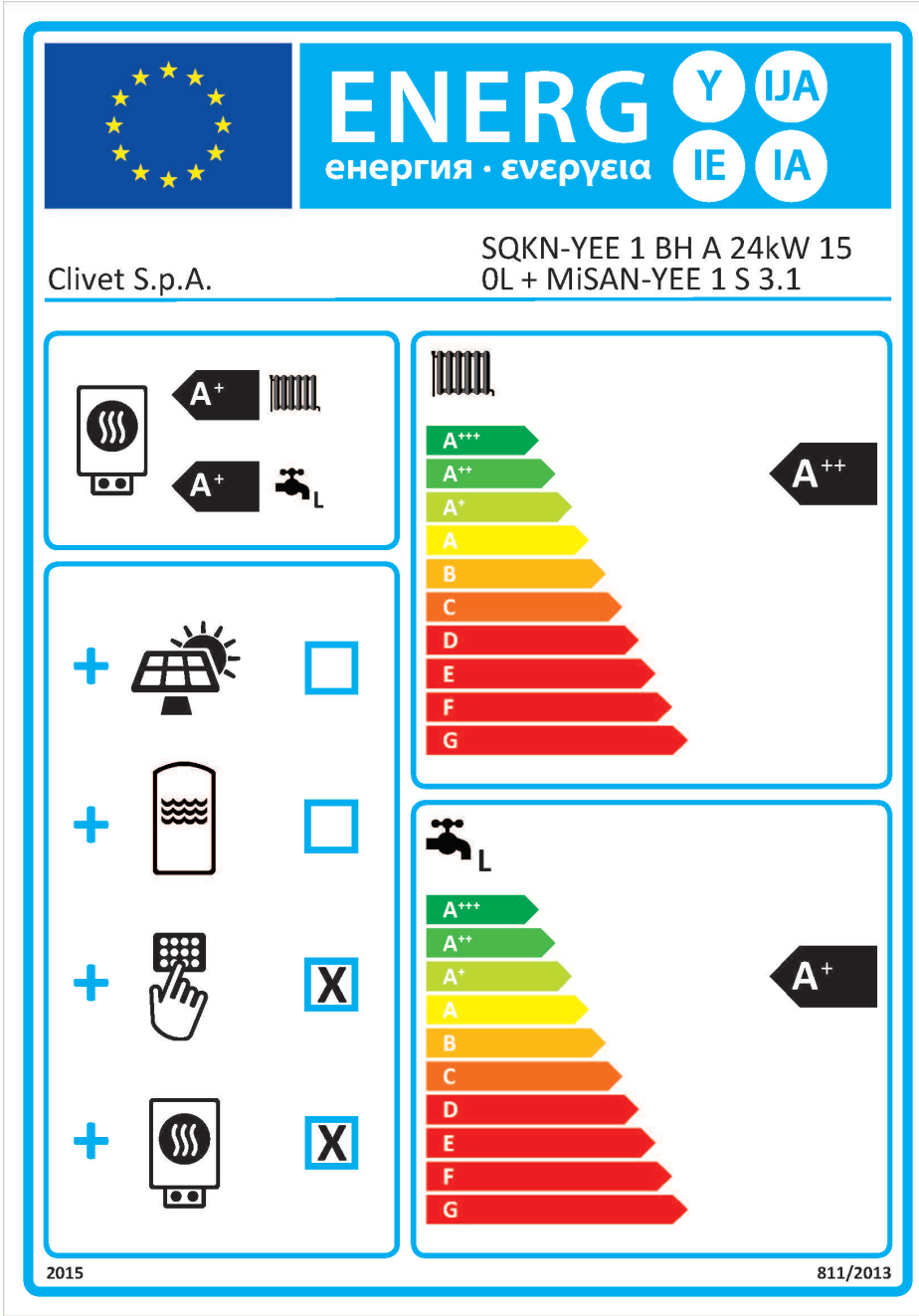
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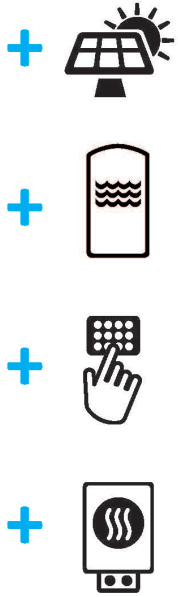

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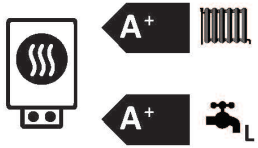

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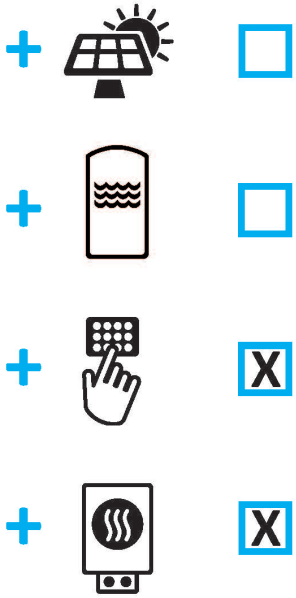

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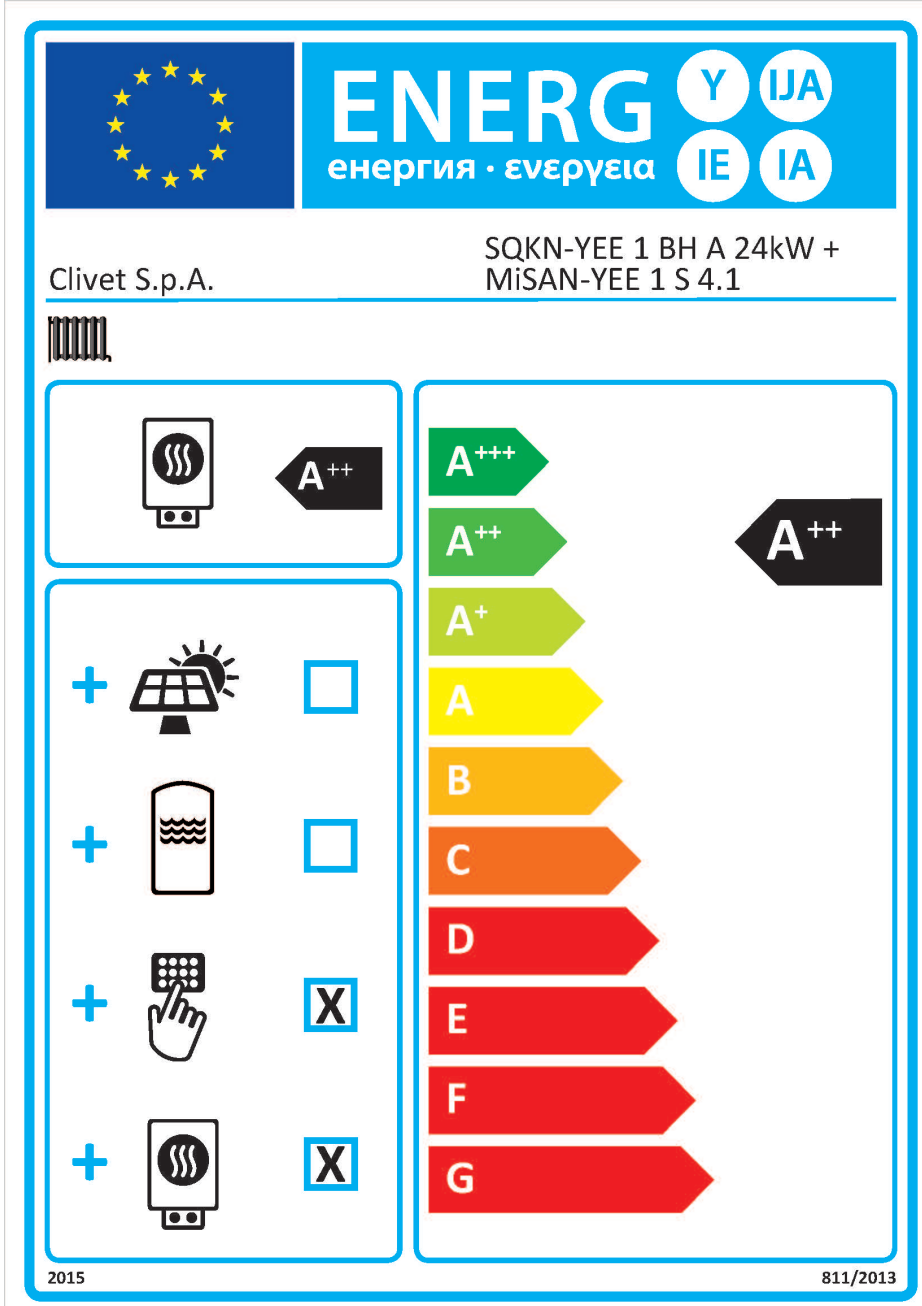
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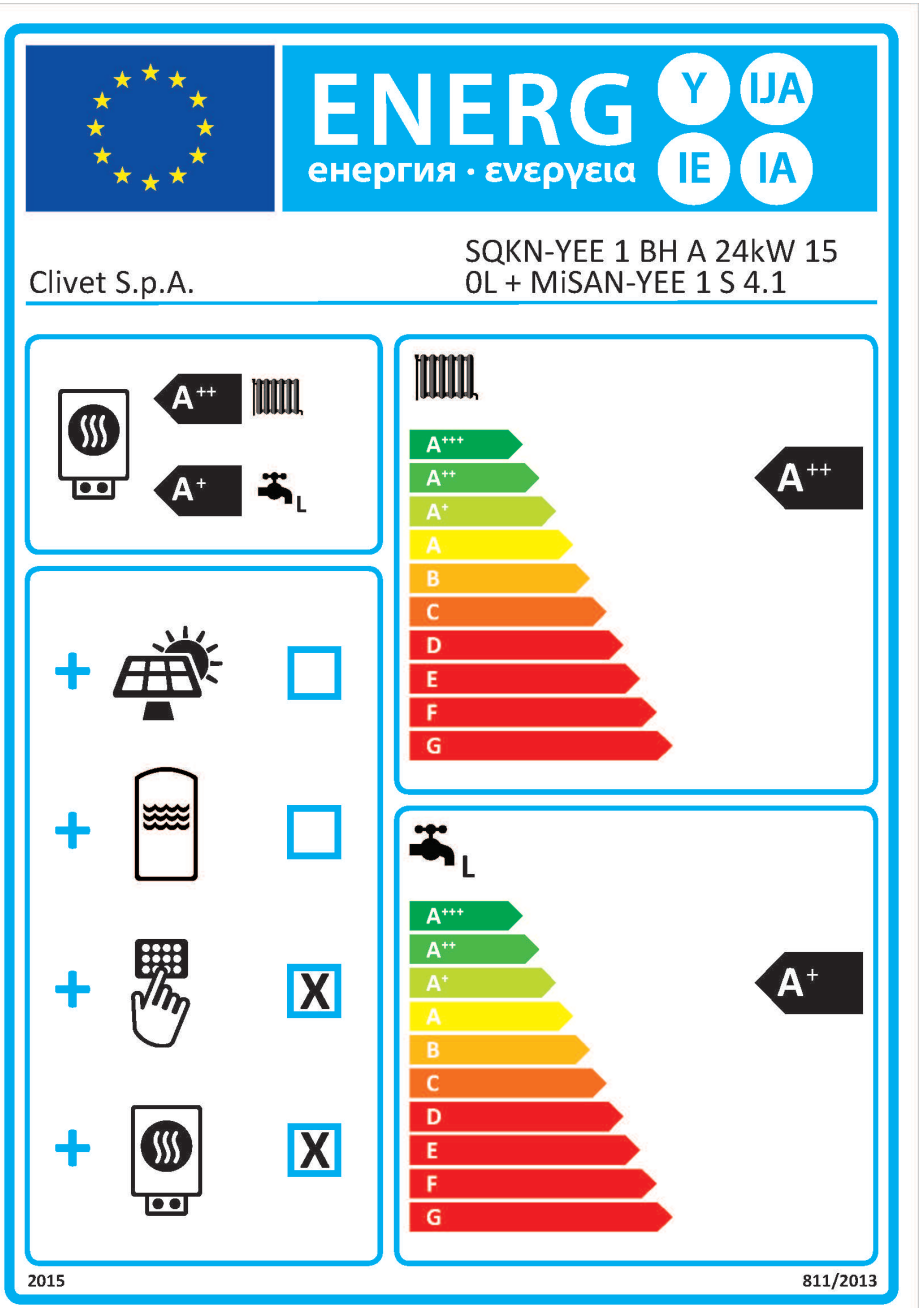
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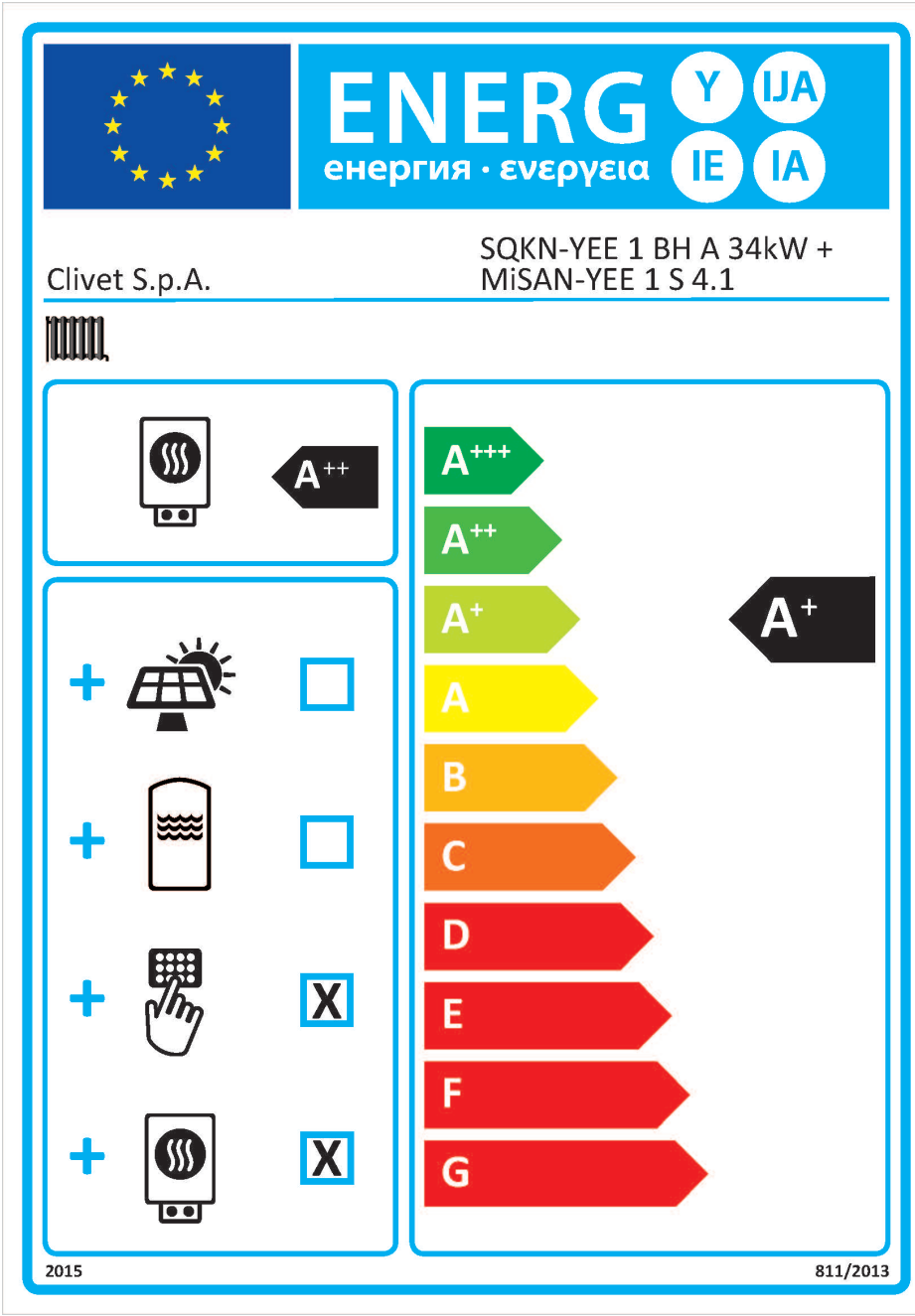
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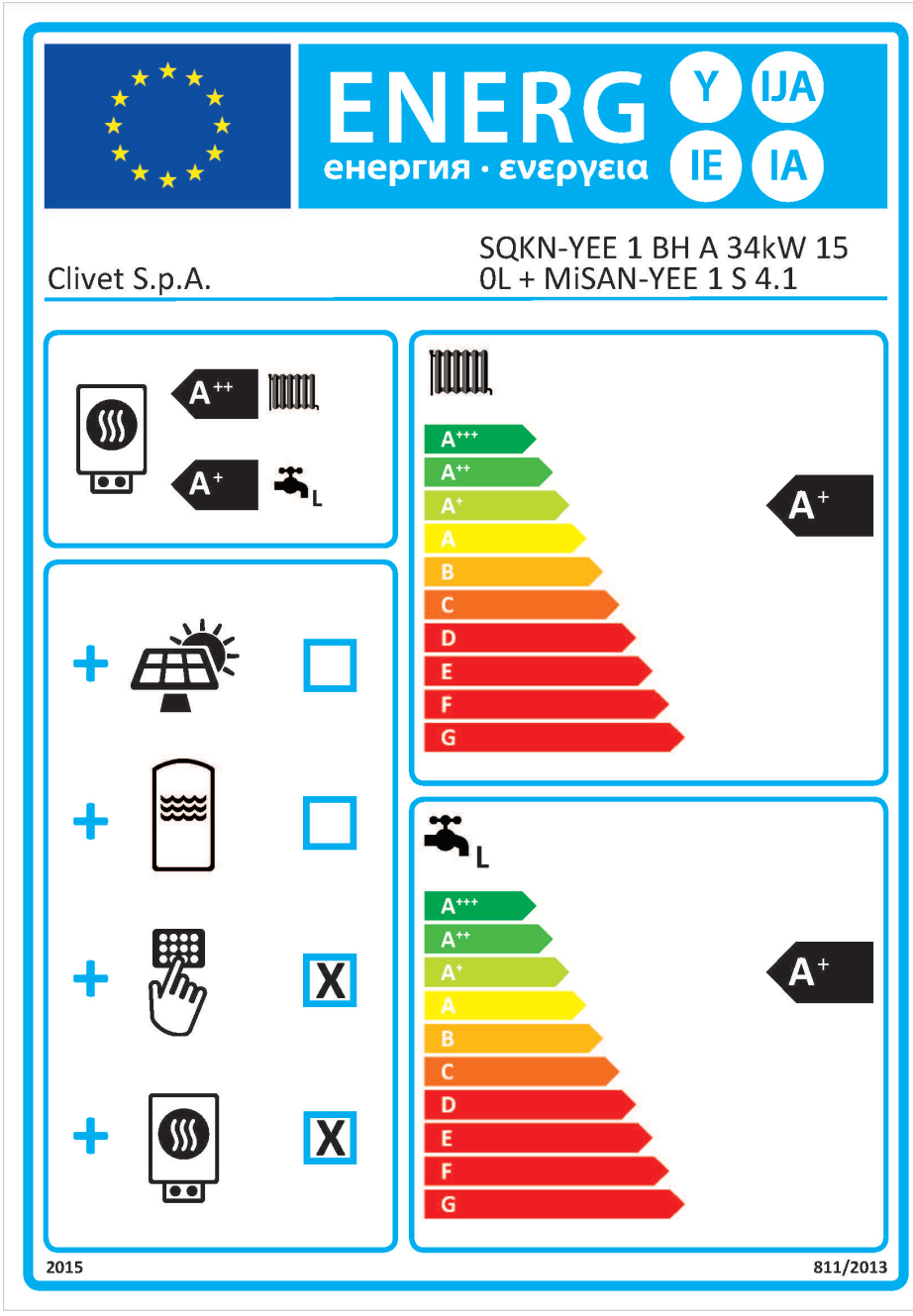
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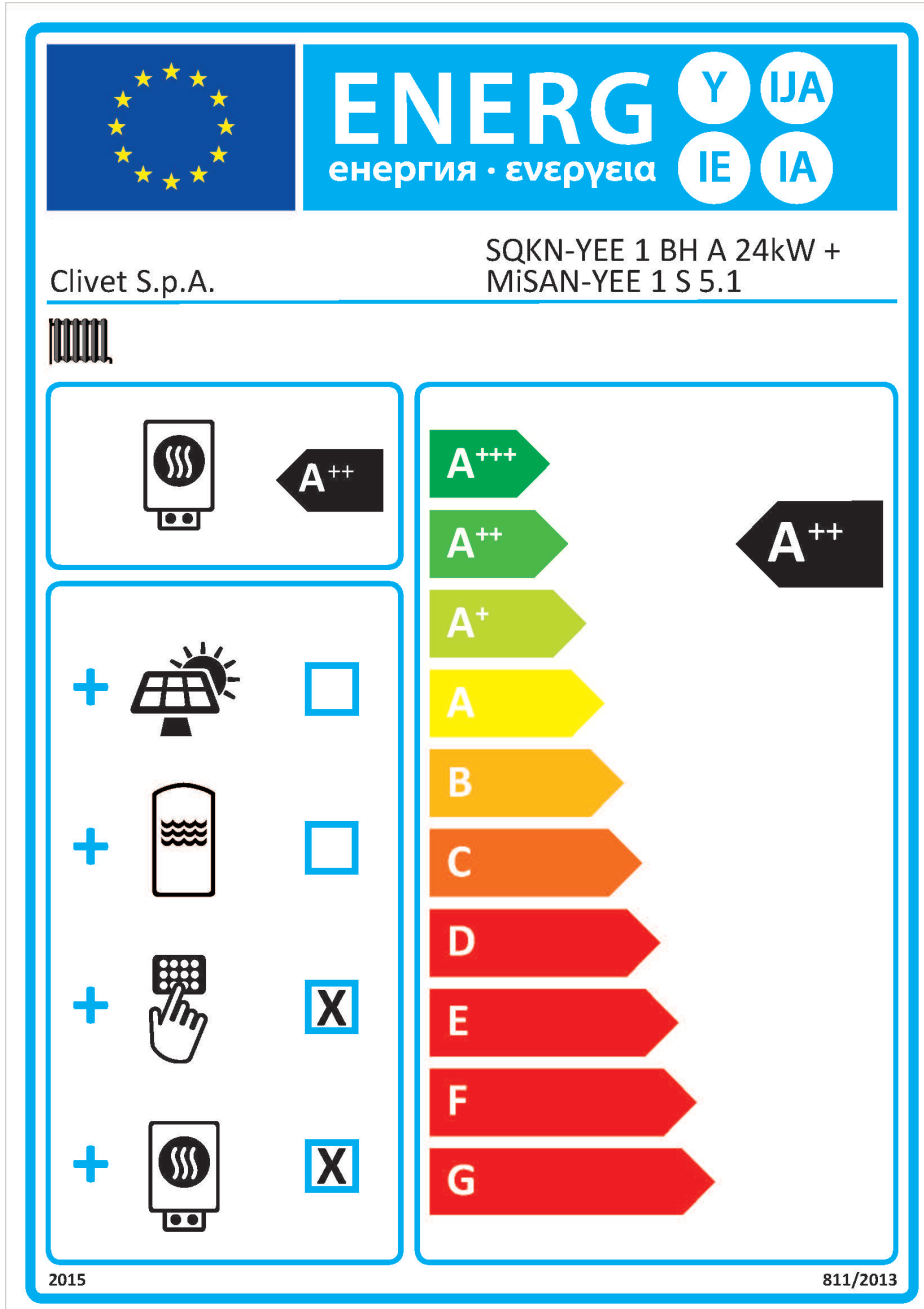
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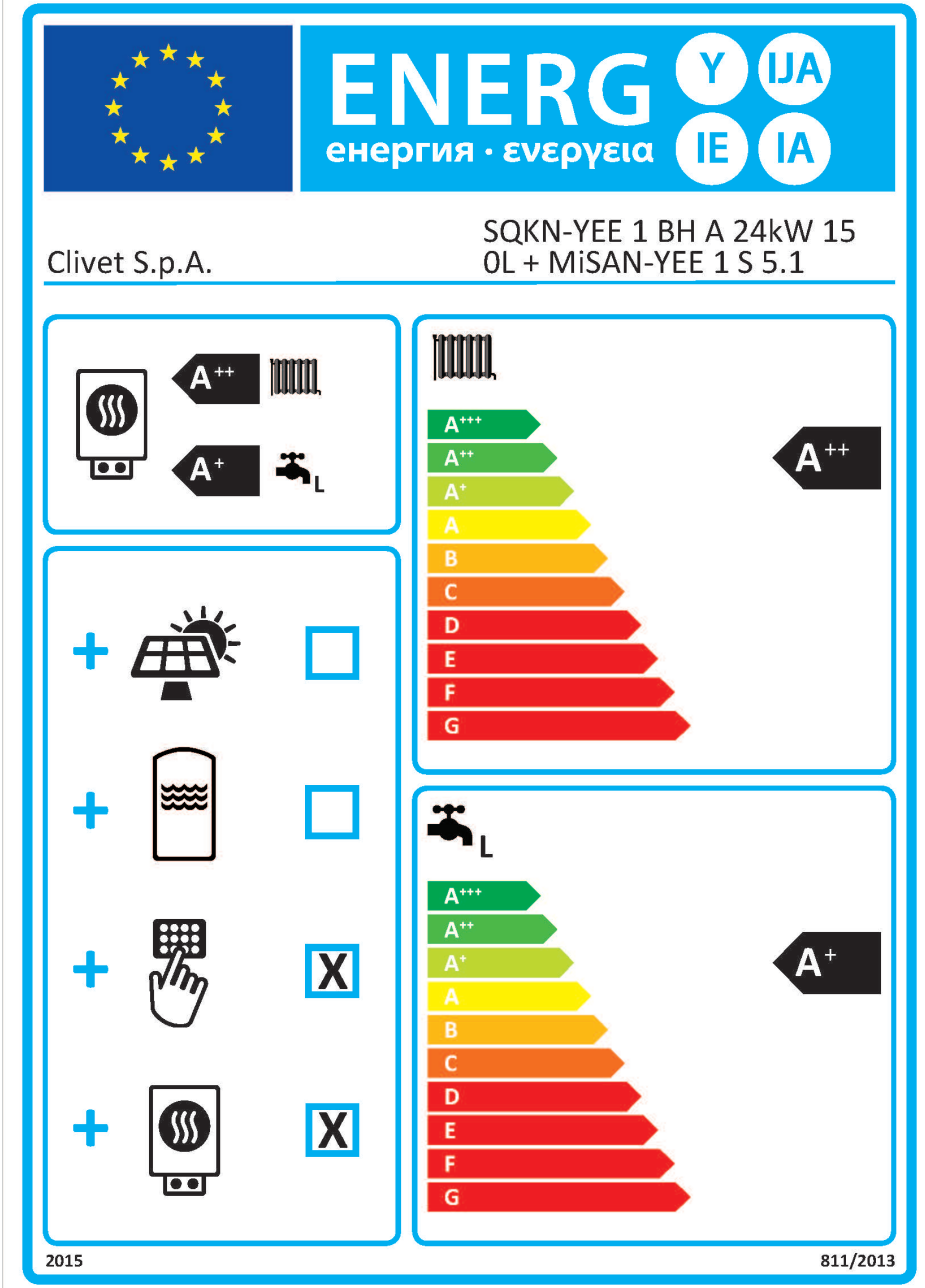
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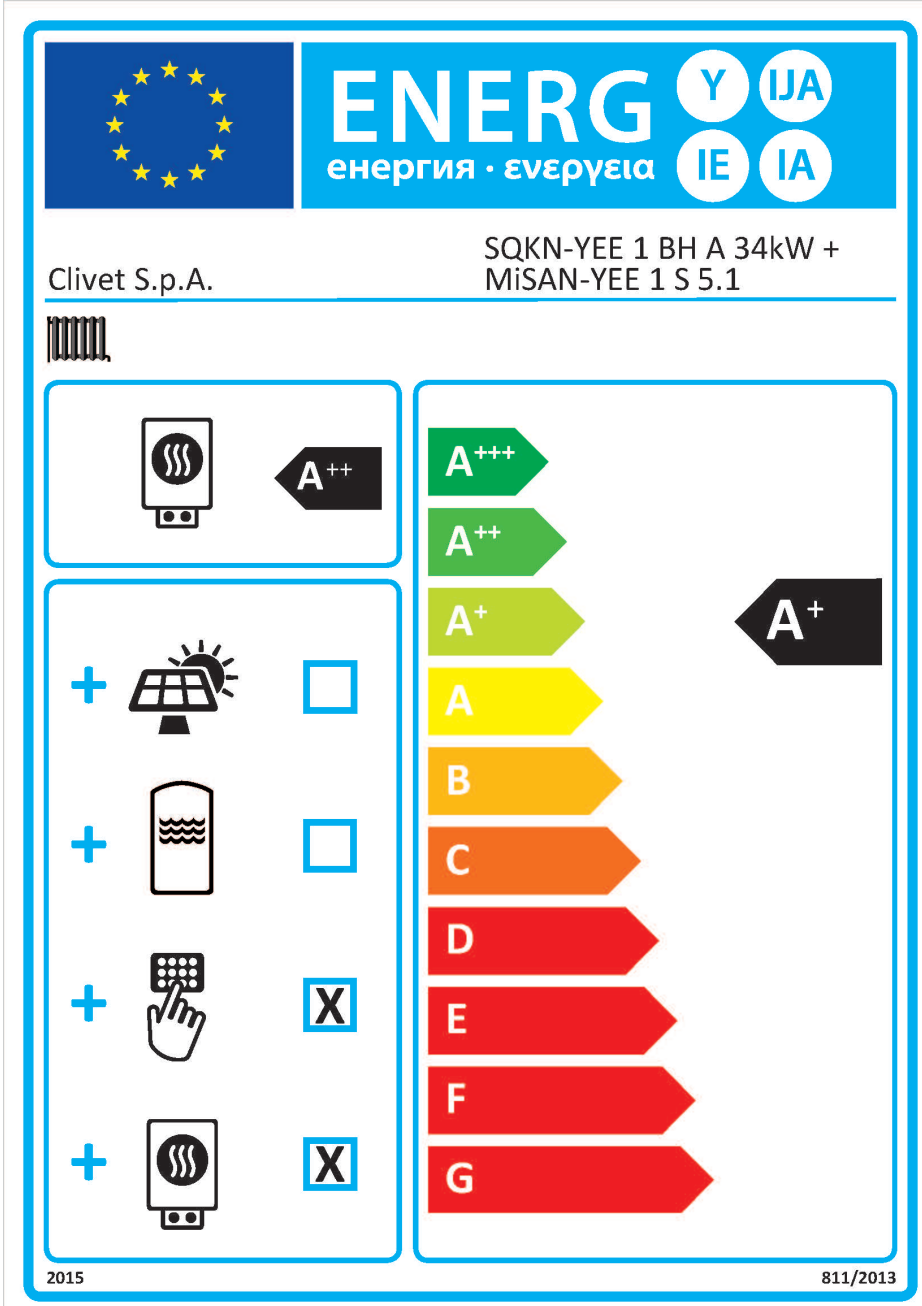
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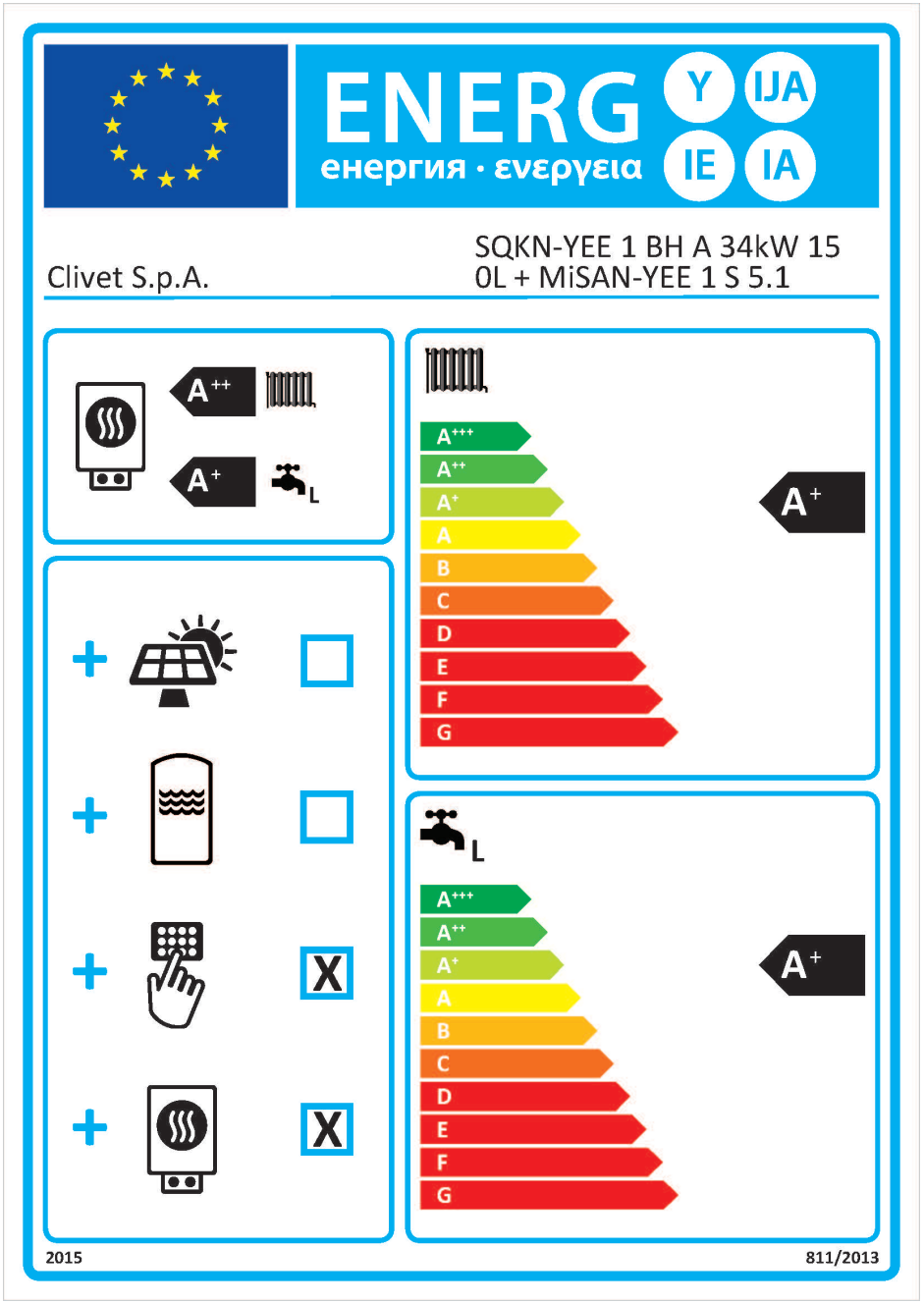
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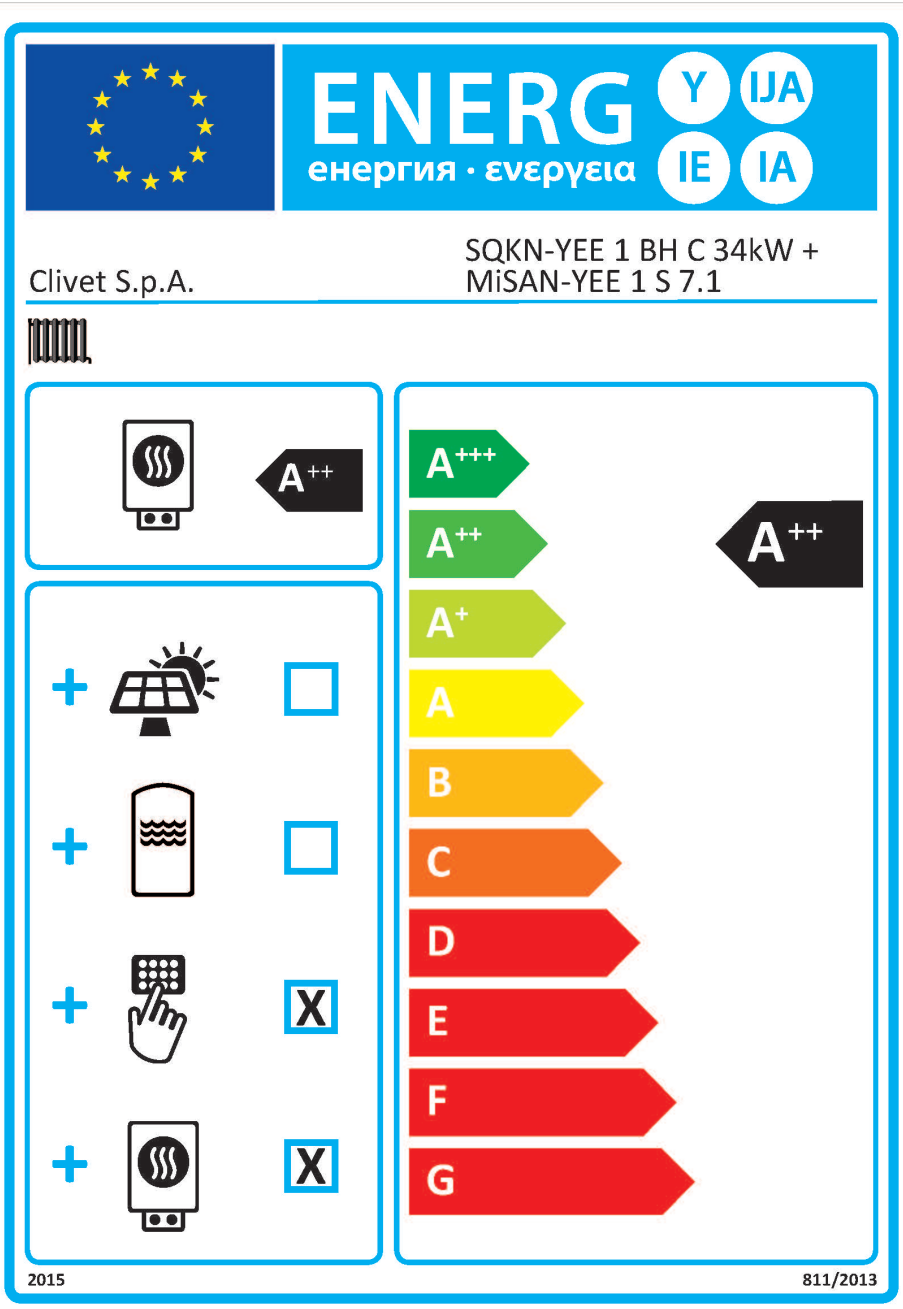
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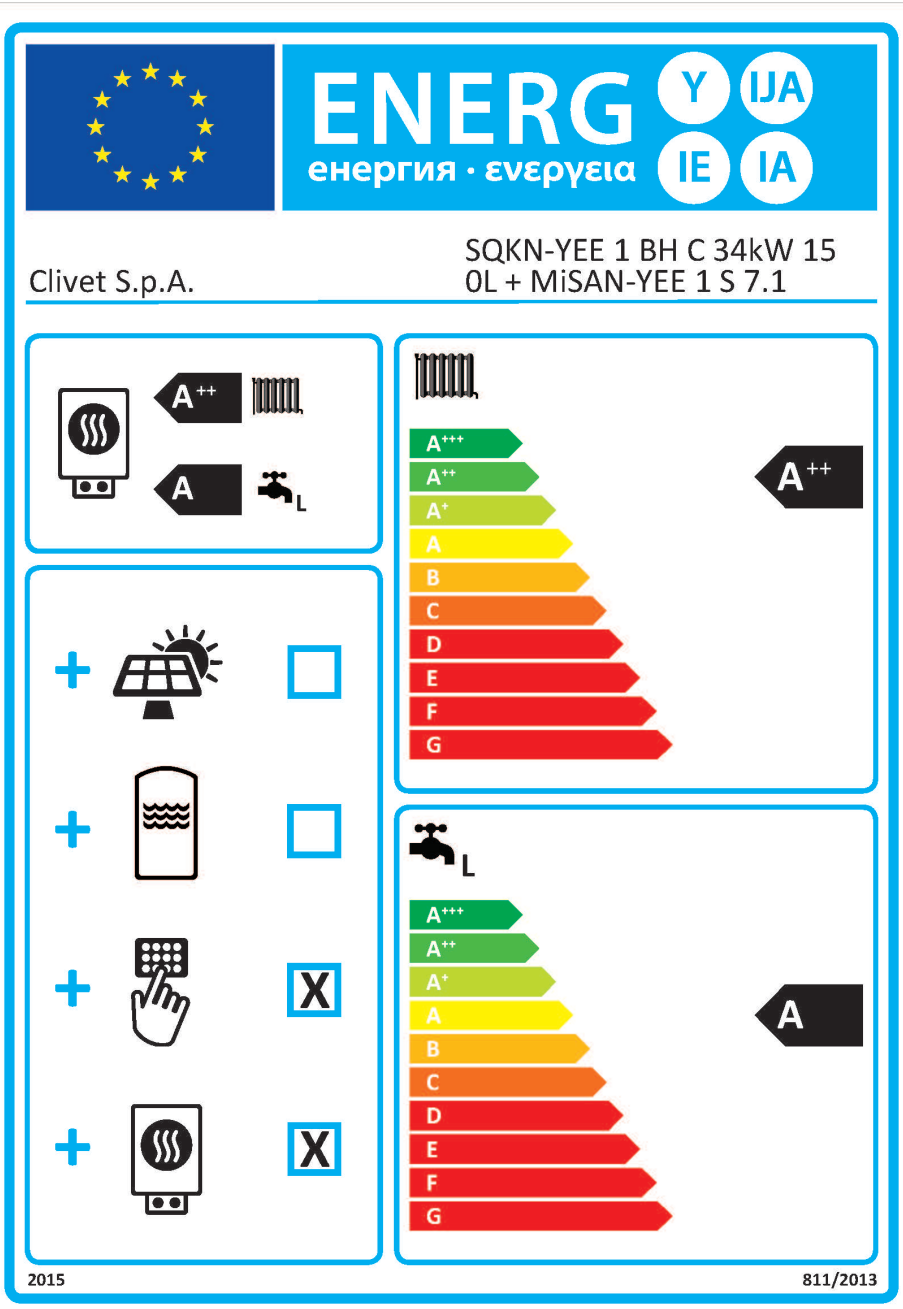
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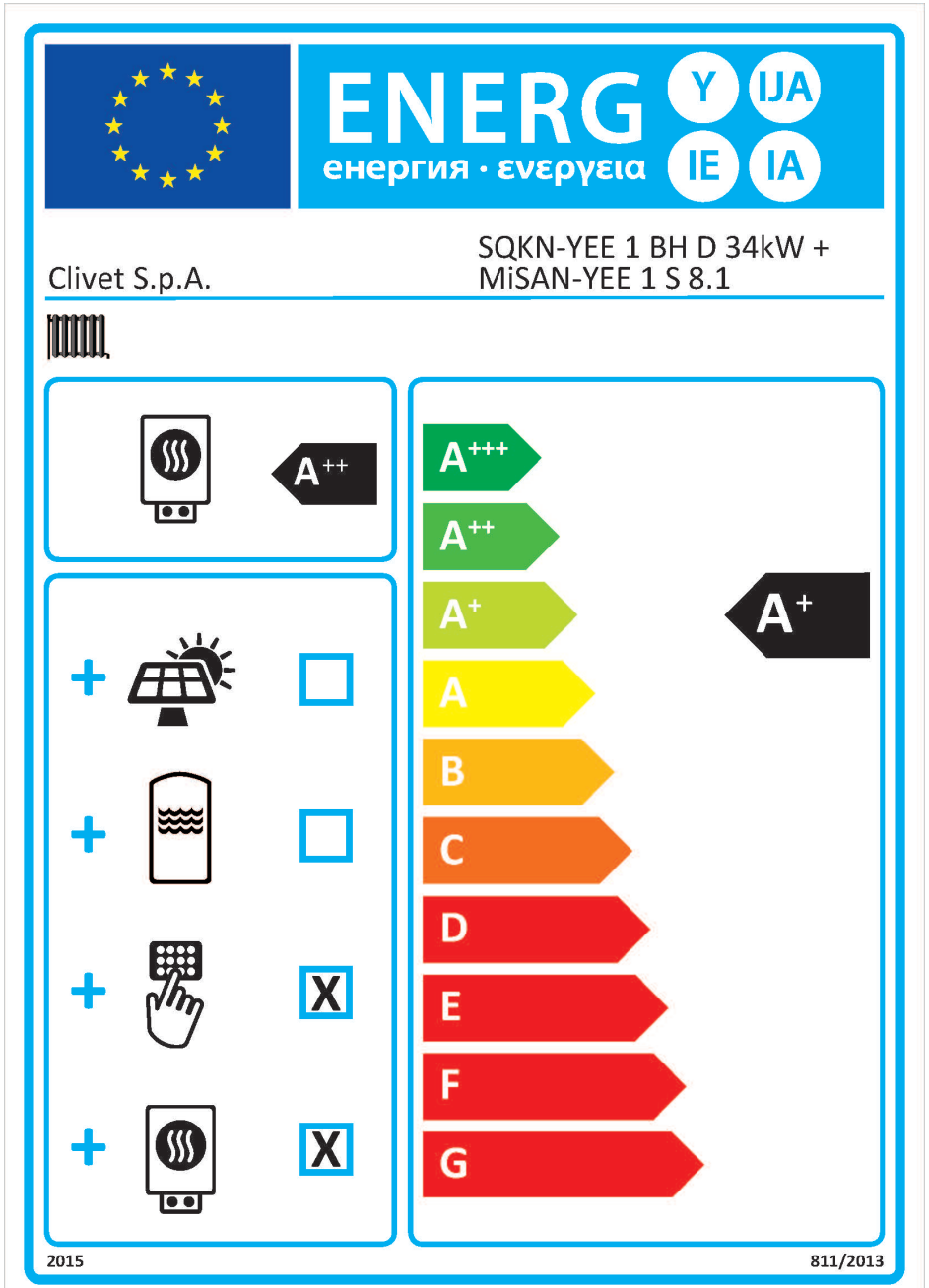
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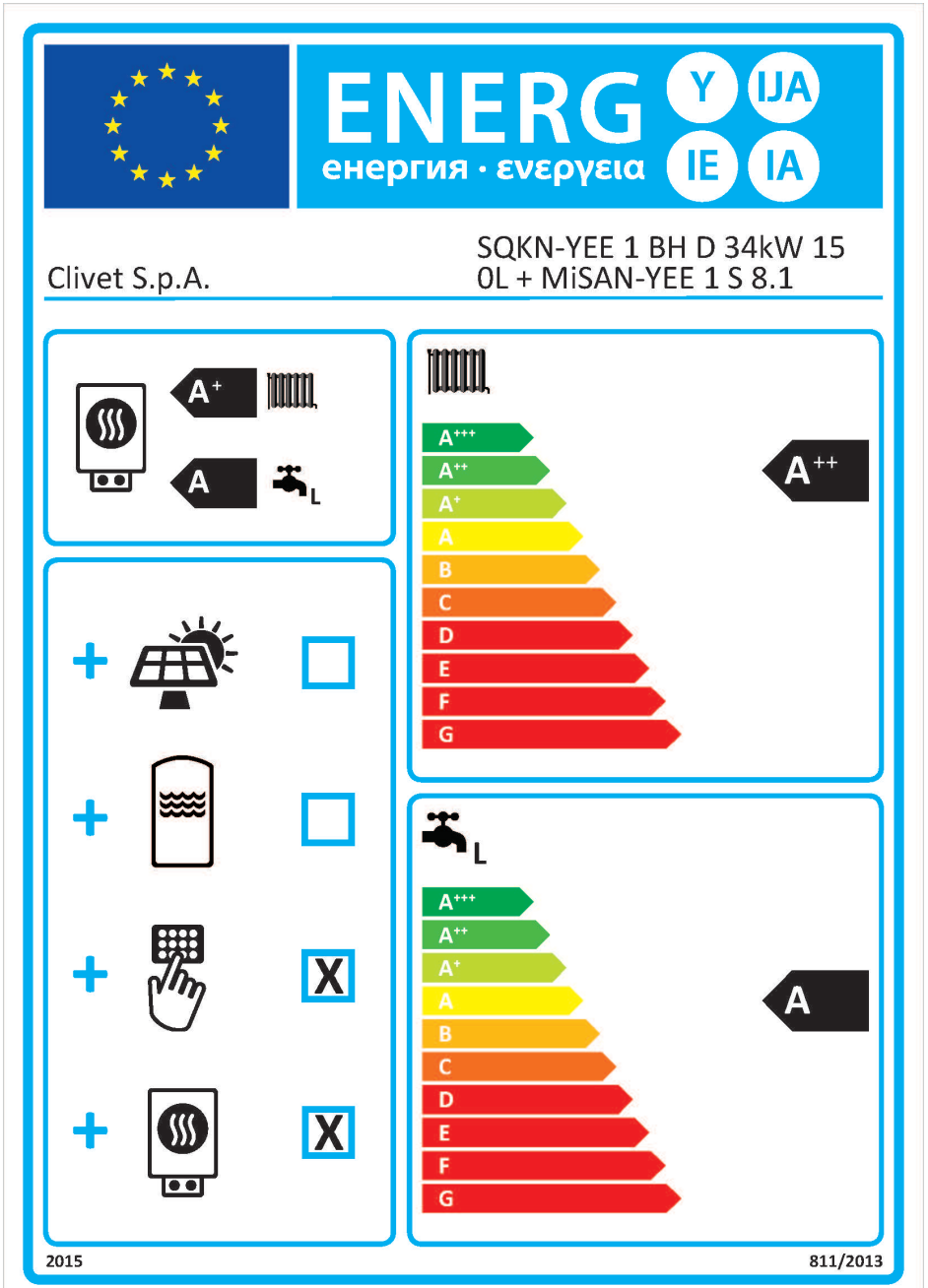
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